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TOLL ENRICHMENT URANIUM HEXAFLUORIDE:
NATURAL AND REACTOR RETURN FEED ANALYSES
AT ORGDP FOR 1974 THROUGH 1980

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INTRODUCTION

The attached tables are summaries of the results of analyses performed at the Oak Ridge Gaseous Diffusion Plant (ORGDP) for defining adherence to Toll Enrichment and program feed specifications* for calendar years (CY) 1974 through 1980. Also included are the results of analyses for metallic impurities for both the natural and reactor return feed materials, and for comparison, ORGDP product for CY 1980. Such information can be useful for (1) reviewing vendor specification adherence, (2) specification review studies and (3) establishing areas requiring special attention.

Sampling and analyses schedules have been revised since the inception of the Toll Enrichment program to reflect changed gaseous diffusion plant operating conditions and vendor experience in complying with specifications. All cylinders of reactor return uranium hexafluoride were sampled and analyzed for full specifications. Cylinders of natural feed were sampled and analyzed prior to October 1979 as follows:

1969 - October 1979

- A. Liquid sampled all cylinders for U and ^{235}U
- B. Liquid sampled 10% for full specification with a minimum of one cylinder per month per vendor.

Note: 1976 - 1978

Excluded all thin wall-cylinders from sampling program (this only affected Allied)

December 1978 - April 1979

- A. Liquid sampled 20% for U and ^{235}U with a minimum of one cylinder per month. (Thin-wall cylinders were folded into 80% not sampled)
- B. Same as above for full specifications.

May 1979 - September 1979

- A and B above were the same for customer-owned cylinders.
- 10% of Allied filled DOE-owned thin-wall cylinders for U, ^{235}U , and full specifications.
- 100% of Kerr-McGee filled DOE-owned thin-wall cylinders for U, ^{235}U , and full specifications.

Since October 1979, the following schedule applies:

	Natural Feed [§]		Other Depleted, Enriched, Reactor Returns
	Allied Chemical BNFL (United Kingdom)	Kerr-McGee Eldorado Comhurex (French)	
Sample rate	20%	100%	100%
Analysis required			
Full specification	50%	10%	100%
Modified specification [∞]	50%	90%	0%

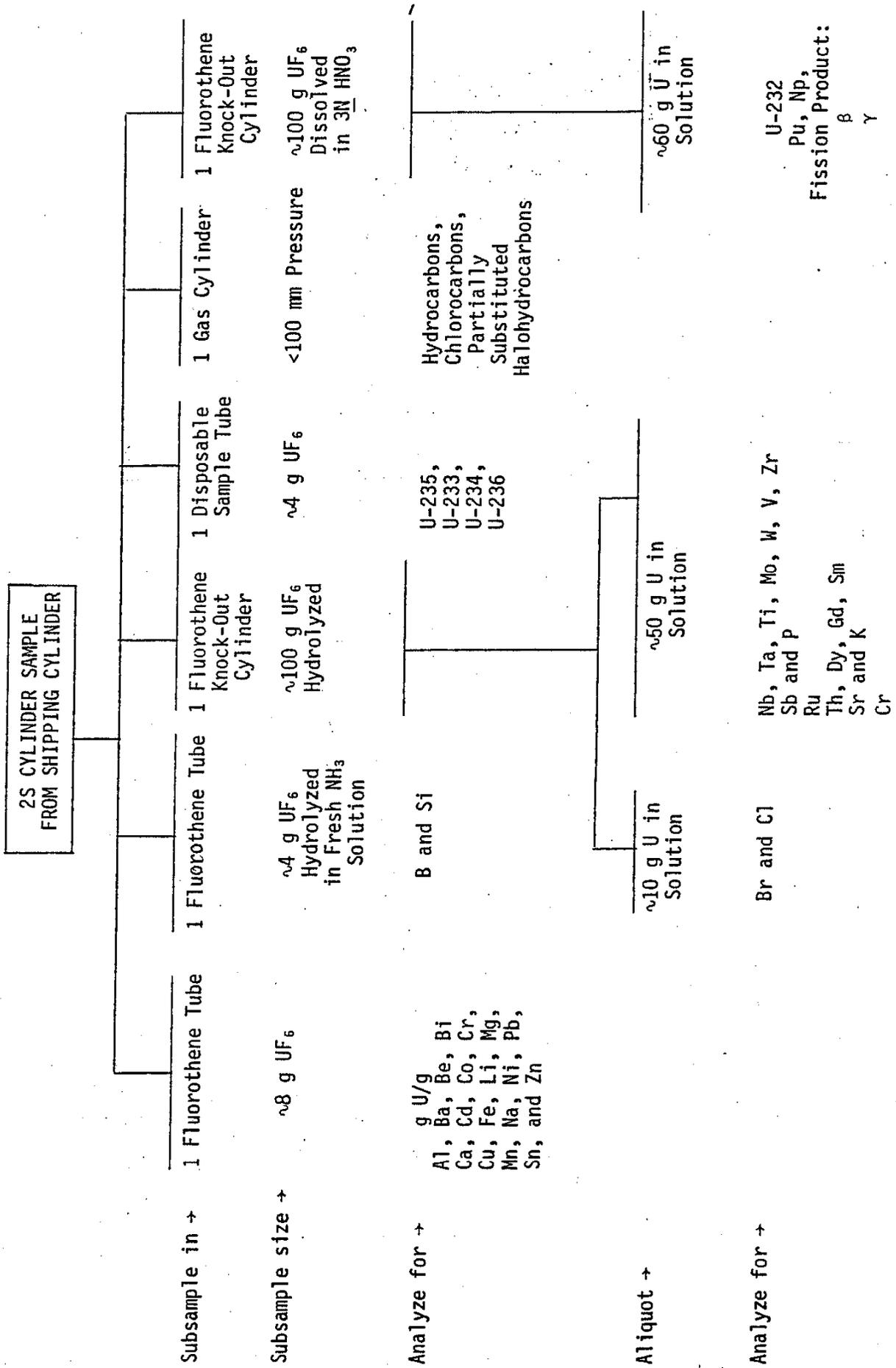
[∞]Includes U, ^{235}U , TNV, Mo and Cr.

[§]Does not include radiochemical analyses.

* Federal Register Notices 32FR 16289-16291, November 29, 1967; 34FR 14039, September 4, 1969; 36FR 4563, March 9, 1971; and 36FR 11877-11878. June

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Table 1
TOLL ENRICHMENT FEED SPECIFICATION SUBSAMPLE FLOW



Subsample in →

Subsample size →

Analyze for →

Aliquot →

Analyze for →

- g U/g
- Al, Ba, Be, Bi
- Ca, Cd, Co, Cr,
- Cu, Fe, Li, Mg,
- Mn, Na, Ni, Pb,
- Sn, and Zn

- Nb, Ta, Ti, Mo, W, V, Zr
- Sb and P
- Ru
- Th, Dy, Gd, Sm
- Sr and K
- Cr

- U-232
- Pu, Np,
- Fission Product:
- β
- γ

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Table 3
 UF₆ AND ²³⁵U OBSERVED IN CY 1980

	Number of Cylinders Received			Wt % UF ₆	Wt % ²³⁵ U
	Total	Sampled and Analyzed			
		Modified* Specs	Full Specs		
<u>Natural Feed</u>					
Allied Chemical	202	21	16	99.957	0.71090
Eldorado Nuclear	85	72	29	99.955	0.71096
Comhurex	58	41	15	99.972	0.71080
Kerr-McGee	214	77	22	99.958	0.71084
BNFL	58	13	8	99.953	0.71105
<u>Reactor Returns</u>					
Comhurex	28	--	28	99.964	--
Russian	3	--	3	99.963	--
<u>ORGDP Product</u>	--	--	10	99.940	--

* Excludes those samples received prior to July 1980 which were analyzed only for U, ²³⁵U, and metallic impurities.

Table 4
SPECIFICATION IMPURITIES OBSERVED IN CY 1980

<u>Natural Feed</u>	<u>Br</u>	<u>Cl</u>	<u>Si</u>	<u>TNV</u> ⁽³⁾	<u>Ti</u>	<u>Mo</u>	<u>BEQ</u> ⁽²⁾	<u>²³²U</u>	<u>γ</u>	<u>β</u>	<u>α</u>
Allied Chemical	x	x	x	x	x	x		{analyses for ²³² U, γ, β, and α are not performed for natural feed}			
Eldorado Nuclear		x ⁽¹⁾	x	x		x ⁽¹⁾					
Comhurex	x	x ⁽¹⁾	x	x	x	x	x				
Kerr-McGee		x	x	x		x	x				
BNFL		x	x	x		x					
<u>Reactor Returns</u>											
Comhurex	x	x	x	x		x		x	x	x	x
Russian		x	x	x							
<u>ORGDP PRODUCT</u>		x	x	x		x					x

(1) One or more results exceeded specifications

(2) Boron equivalent cross-section (BEQ)

(3) Total non-volatile fluorides (TNV)

Table 5
METALLIC IMPURITIES OBSERVED IN CY 1980

<u>Natural Feed</u>	<u>Al</u>	<u>Ba</u>	<u>Be</u>	<u>Bi</u>	<u>Ca</u>	<u>Cd</u>	<u>Co</u>	<u>Cu</u>	<u>Fe</u>	<u>Li</u>	<u>Mg</u>	<u>Mn</u>	<u>Na</u>	<u>Ni</u>	<u>Pb</u>	<u>Sn</u>	<u>Zn</u>
Allied Chemical					x	x	x	x	x		x	x	x	x			
Eldorado Nuclear	x		x		x	x	x	x	x	x	x	x	x	x		x	
Comhurex	x				x	x		x	x		x	x	x	x	x	x	
Kerr-McGee	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	
BNFL						x		x	x		x		x	x			

Table 6 is a summary of average purity and ^{235}U isotopic results of natural feed for CY 1974 through 1980. There is little difference in the purity levels among vendors or years (generally within 0.02 wt % of UF_6) except for 1980, where averaged results for all vendors but Comhurex are generally lower by 0.02-0.03 wt % of UF_6 than are comparable results for previous years. There is little difference in the ^{235}U isotopic levels among vendors or years, with Eldorado Nuclear and BNFL having slightly higher levels than Allied Chemical and Comhurex levels, and with Kerr-McGee having generally the lowest ^{235}U level.

Of the 765 cylinders of natural feed sampled and analyzed for conformance to specifications for CY 1974 through 1980, only 11 individual specification results of a total of 11,900 results obtained did not conform to specifications. All of the 135 cylinders of reactor return feed for CY 1974 through 1980 representing 3,375 analyses conformed to specifications. One cylinder of natural feed from Eldorado Nuclear did not meet the Mo specification in 1978, and three did not meet the Mo specification in 1980. In addition, one cylinder of natural feed from Eldorado Nuclear did not meet the chlorine specification in 1980. One cylinder of Comhurex natural feed did not meet the ^{235}U specification in 1977, three did not meet the ^{235}U specification in 1979, and one did not meet the Cl specification in 1980. One cylinder of BNFL natural feed did not meet the Cl specification in 1977. One Kerr-McGee did not meet the Ti specification in 1979.

SPECIFICATION ANALYSES RESULTS

NATURAL FEED

The following tables provide information concerning the required measurement, specification level, units and basis of results, the number of samples analyzed, the arithmetic average of observed results (less than values are excluded in averages), the range of results, and the number of results exceeding specification.

The following tables are included:

Table Number	Vendor
7-74 through 7-80	Allied Chemical for CY 1974 through 1980
8-74 through 8-80	Eldorado Nuclear for CY 1974 through 1980
9-74 through 9-80	Comhurex for CY 1974 through 1980
10-74 through 10-80	Kerr-McGee for CY 1974 through 1980
11-74 through 11-80	BNFL for CY 1974 through 1980

The tables include all specifications for natural feed UF_6 except for those related to reactor return feed, i.e., ^{232}U , ^{233}U , fission product β and γ , and transuranic alpha. The isotopes ^{234}U and ^{236}U were also not measured for natural feed UF_6 . Cylinder vapor pressures are not included after 1975 due to changes in ORGDP sampling procedures.

Table 6

PURITY AND ^{235}U RESULTS SUMMARY FOR NATURAL FEED
BY VENDOR FOR 1974 THROUGH 1980

	Average Purity, Weight Percent UF_6						
	1974	1975	1976	1977	1978	1979	1980
Allied Chemical	99.981	99.982	99.971	99.981	99.981	99.975	99.957
Eldorado Nuclear	99.981	99.992	99.990	99.980	99.978	99.975	99.955
Comhurex	99.966	99.990	99.977	99.984	99.978	99.977	99.972
Kerr-McGee	99.975	99.987	99.982	99.992	99.978	99.976	99.958
BNFL	99.974	99.982	99.987	99.988	99.985	99.980	99.953

	Average ^{235}U , Weight Percent						
	1974	1975	1976	1977	1978	1979	1980
Allied Chemical	0.71092	0.71085	0.71097	0.71095	0.71092	0.71086	0.71090
Eldorado Nuclear	0.71113	0.71092	0.71106	0.71102	0.71101	0.71102	0.71096
Comhurex	0.71104	0.71095	0.71090	0.71070	0.71109	0.71016*	0.71080
Kerr-McGee	0.71082	0.71088	0.71083	0.71085	0.71085	0.71084	0.71108
BNFL	0.71096	0.71112	0.71117	0.71113	0.71107	0.71110	0.71105

*Includes 3 of 16 results lower than 0.7103 Wt % ^{235}U .

Table 7-74

SPECIFICATION ANALYSES FOR ALLIED CHEMICAL NATURAL FEED

CY-1974

Measurement	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)	Average						
Uranium Hexafluoride	99.5	99.981	Percent	Weight	17	99.981	99.96-100	0
Uranium	(3)	67.605	Percent	Weight	17	67.605	67.59-67.62	-
Hydrocarbons, etc.	0.01	<0.01	Percent	Mole	17	<0.01	All <0.01	0
Antimony	1	<1	ppm	U	17	<1	All <1	0
Bromine	5	<1	ppm	U	17	<1	All <1	0
Chlorine	100	39.0	ppm	U	17	39.0	20-49	0
Niobium	1	<0.2	ppm	U	17	<0.2	All <0.2	0
Phosphorus	50	<20	ppm	U	17	<20	All <20	0
Ruthenium	1	<1	ppm	U	17	<1	All <1	0
Silicon	100	8.9	ppm	U	17	8.9	3-32	0
Tantalum	1	<0.5	ppm	U	17	<0.5	All <0.5	0
Titanium	1	<0.3	ppm	U	17	<0.3	All <0.3	0
Nonvolatile Fluorides	300	36.2	ppm	U	17	36.2	3-132	0
Chromium	1500	<700	ppm	235U	17	<700	All <700	0
Molybdenum	200	<28	ppm	235U	17	<28	All <28	0
Tungsten	200	<70	ppm	235U	17	<70	All <70	0
Vanadium	200	<42	ppm	235U	17	<42	All <42	0
Boron Equivalent Cross Section	8	2.0	ppm	U	17(1)	2.0	<1.8-2	0
Uranium-235	0.7103	0.71092	Percent	Weight	17	0.71092	0.7107-0.7112	0
Cylinder Pressure	75	65.4	PSIA	At 200°F	17	65.4	64-68	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification.

Table 7-75

SPECIFICATION ANALYSES FOR ALLIED CHEMICAL NATURAL FEED

CY-1975

Measurement	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)	Specification						
Uranium Hexafluoride	99.5		Percent	Weight	19	99.982	99.96-100	0
Uranium	(3)		Percent	Weight	19	67.606	67.59-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	19	<0.01	All <0.01	0
Antimony	1		ppm	U	19	<1	All <1	0
Bromine	5		ppm	U	19	<1	All <1	0
Chlorine	100		ppm	U	19	37.2	19-61	0
Niobium	1		ppm	U	19	<0.2	All <0.2	0
Phosphorus	50		ppm	U	19(1)	20	<20-20	0
Ruthenium	1		ppm	U	19	<1	All <1	0
Silicon	100		ppm	U	19(10)	6.3	<2-8	0
Tantalum	1		ppm	U	19	<0.5	All <0.5	0
Titanium	1		ppm	U	19	<0.3	All <0.3	0
Nonvolatile Fluorides	300		ppm	U	19	31.0	5-63	0
Chromium	1500		ppm	235U	19	<700	All <700	0
Molybdenum	200		ppm	235U	19	<28	All <28	0
Tungsten	200		ppm	235U	19	<70	All <70	0
Vanadium	200		ppm	235U	19	<42	All <42	0
Boron Equivalent Cross Section	8		ppm	U	19	<1.8	All <1.8	0
Uranium-235	0.7103		Percent	Weight	19	0.71085	0.7106-0.7110	0
Cylinder Pressure	75		PSIA	At 200°F	19	53.5	50-66	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification.

Table 7-76

SPECIFICATION ANALYSES FOR ALLIED CHEMICAL NATURAL FEED

CY-1976

Measurement	Feed Specification Level (1)	Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
Iranium Hexafluoride	99.5	Percent	Weight	14	99.971	99.87-100	0
Iranium hydrocarbons, etc.	(3)	Percent	Weight	14	67.599	67.53-67.62	-
Antimony	0.01	Percent	Mole	14	<0.01	All <0.01	0
Bromine	1	ppm	U	14	<1	All <1	0
Chlorine	5	ppm	U	14	<1	All <1	0
Fluorine	100	ppm	U	14	31.9	16-47	0
Phosphorus	1	ppm	U	14	<0.2	All <0.2	0
Sulfur	50	ppm	U	14	<20	All <20	0
Zinc	1	ppm	U	14	<1	All <1	0
Silicon	100	ppm	U	14	4.6	<2-10	0
Tantalum	1	ppm	U	14	<0.5	All <0.5	0
Titanium	1	ppm	U	14	<0.3	All <0.3	0
Nonvolatile Fluorides	300	ppm	U	14	31.3	6-70	0
Chromium	1500	ppm	235U	14	<700	All <700	0
Molybdenum	200	ppm	235U	14	<28	All <28	0
Copper	200	ppm	235U	14	<70	All <70	0
Nickel	200	ppm	235U	14	<42	All <42	0
Boron Equivalent Cross Section	8	ppm	U	14	<1.8	All <1.8	0
Iranium-235	0.7103	Percent	Weight	14	0.71097	0.7109-0.7111	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 7-77

SPECIFICATION ANALYSES FOR ALLIED CHEMICAL NATURAL FEED

CY-1977

Measurement	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)	Average						
Uranium Hexafluoride	99.5	99.981	Percent	Weight	15	99.981	99.94-100	0
Uranium	(3)	67.605	Percent	Weight	15	67.605	67.58-67.62	-
Hydrocarbons, etc.	0.01	<0.01	Percent	Mole	15	<0.01	A11 <0.01	0
Antimony	1	<1	ppm	U	15	<1	A11 <1	0
Bromine	5	<1	ppm	U	15	<1	A11 <1	0
Chlorine	100	41.8	ppm	U	15	41.8	27-96	0
Niobium	1	<0.2	ppm	U	15	<0.2	A11 <0.2	0
Phosphorus	50	<20	ppm	U	15	<20	A11 <20	0
Ruthenium	1	<1	ppm	U	15	<1	A11 <1	0
Silicon	100	8.0	ppm	U	15(4)	8.0	<2-10	0
Tantalum	1	<0.5	ppm	U	15	<0.5	A11 <0.5	0
Titanium	1	<0.3	ppm	U	15	<0.3	A11 <0.3	0
Nonvolatile Fluorides	300	42.6	ppm	U	15(14)	42.6	<1-110	0
Chromium	1500	<700	ppm	235U	15	<700	A11 <700	0
Molybdenum	200	<28	ppm	235U	15	<28	A11 <28	0
Tungsten	200	<70	ppm	235U	15	<70	A11 <70	0
Vanadium	200	<42	ppm	235U	15	<42	A11 <42	0
Boron Equivalent Cross Section	8	<1.8	ppm	U	15	<1.8	A11 <1.8	0
Uranium-235	0.7103	0.71095	Percent	Weight	15	0.71095	0.7108-0.7111	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 7-78

SPECIFICATION ANALYSES FOR ALLIED CHEMICAL NATURAL FEED

CY-1978

Measurement	Feed Specification		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Level (1)	Level (3)						
Strontium Hexafluoride	99.5		Percent	Weight	19	99.981	99.96-100	0
Strontium	(3)		Percent	Weight	19	67.606	67.59-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	19	<0.01	All <0.01	0
Antimony	1		ppm	U	19	<1	All <1	0
Bromine	5		ppm	U	19(1)	1.3	<1-1.3	0
Chlorine	100		ppm	U	19	58.8	23-99	0
Niobium	1		ppm	U	19	<0.2	All <0.2	0
Phosphorus	50		ppm	U	19	<20	All <20	0
Ruthenium	1		ppm	U	19	<1	All <1	0
Silicon	100		ppm	U	19(10)	4.8	<2.10	0
Tantalum	1		ppm	U	19	<0.5	All <0.5	0
Titanium	1		ppm	U	19	<0.3	All <0.3	0
Volatile Fluorides	300		ppm	U	19	37.1	8-107	0
Chromium	1500		ppm	235U	19	<700	All <700	0
Molybdenum	200		ppm	235U	19	<28	All <28	0
Copper	200		ppm	235U	19	<70	All <70	0
Manganese	200		ppm	235U	19	<42	All <42	0
Selenium Equivalent Cross Section	8		ppm	U	19	<1.8	All <1.8	0
Strontium-235	0.7103		Percent	Weight	19	0.71092	0.7106-0.7111	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 7-79

SPECIFICATION ANALYSES FOR ALLIED CHEMICAL NATURAL FEED

CY-1979

Measurement	Feed Specification		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Level (1)							
Uranium Hexafluoride	99.5		Percent	Weight	21	99.975	99.94-100	0
Uranium	(3)		Percent	Weight	21	67.603	67.58-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	21	<0.01	All <0.01	0
Antimony	1		ppm	U	21	<1	All <1	0
Bromine	5		ppm	U	21(4)	2.5	<1-3.9	0
Chlorine	100		ppm	U	21	46.0	15-89	0
Niobium	1		ppm	U	21	<0.2	All <0.2	0
Phosphorus	50		ppm	U	21	<20	All <20	0
Ruthenium	1		ppm	U	21	<1	All <1	0
Silicon	100		ppm	U	21(18)	6.4	<2-45	0
Tantalum	1		ppm	U	21	<0.5	All <0.5	0
Titanium	1		ppm	U	21(1)	0.6	<0.3-0.6	0
Nonvolatile Fluorides	300		ppm	U	21	54.6	7-203	0
Chromium	1500		ppm	235U	21	<700	All <700	0
Molybdenum	200		ppm	235U	21(1)	140	<28-140	0
Tungsten	200		ppm	235U	21	<70	All <70	0
Vanadium	200		ppm	235U	21	<42	All <42	0
Boron Equivalent Cross Section	8		ppm	U	21	<1.8	All <1.8	0
Uranium-235	0.7103		Percent	Weight	21	0.71086	0.7107-0.7111	0

(1) All levels are maximums except UF₆ and 235U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 7-80

SPECIFICATION ANALYSES FOR ALLIED CHEMICAL NATURAL FEED

CY-1980

Measurement	Feed Specification		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Level (1)							
Zirconium Hexafluoride	99.5		Percent	Weight	21	99.957	99.88-100	0
Zirconium	(3)		Percent	Weight	21	67.590	67.54-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	16	<0.01	All <0.01	0
Antimony	1		ppm	U	16	<1	All <1	0
Bromine	5		ppm	U	16(2)	1.05	<1-1.1	0
Chlorine	100		ppm	U	16	53.0	33-73	0
Yttrium	1		ppm	U	16	<0.2	All <0.2	0
Phosphorus	50		ppm	U	16	<20	All <20	0
Ruthenium	1		ppm	U	16	<1	All <1	0
Silicon	100		ppm	U	16(15)	7.9	<2-14	0
Tantalum	1		ppm	U	16	<0.5	All <0.5	0
Titanium	1		ppm	U	16	<0.3	All <0.3	0
Nonvolatile Fluorides	300		ppm	U	21	51.5	8-215	0
Chromium	1500		ppm	235U	21	<700	All <700	0
Molybdenum	200		ppm	235U	21(3)	65	<28-140	0
Tungsten	200		ppm	235U	16	<70	All <70	0
Vanadium	200		ppm	235U	16	<42	All <42	0
Boron Equivalent Cross Section	8		ppm	U	16	<1.8	All <1.8	0
Zirconium-235	0.7103		Percent	Weight	21	0.71090	0.7108-0.7111	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 8-74

SPECIFICATION ANALYSES FOR ELDORADO NUCLEAR NATURAL FEED

CY-1974

Measurement	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)	Number						
Uranium Hexafluoride	99.5	12	Percent	Weight	12	99.981	99.96-99.99	0
Uranium	(3)	12	Percent	Weight	12	67.605	67.59-67.61	-
Hydrocarbons, etc.	0.01	12	Percent	Mole	12	<0.01	All <0.01	0
Antimony	1	12	ppm	U	12	<1	All <1	0
Bromine	5	12	ppm	U	12	<1	All <1	0
Chlorine	100	12	ppm	U	12	33.3	25-46	0
Niobium	1	12	ppm	U	12	<0.2	All <0.2	0
Phosphorus	50	12	ppm	U	12	<20	All <20	0
Ruthenium	1	12	ppm	U	12	<1	All <1	0
Silicon	100	12(11)	ppm	U	12(11)	10.0	<2-20	0
Tantalum	1	12	ppm	U	12	<0.5	All <0.5	0
Titanium	1	12	ppm	U	12	<0.3	All <0.3	0
Nonvolatile Fluorides	300	12(11)	ppm	U	12(11)	41.7	<1-62	0
Chromium	1500	12	ppm	235U	12	<700	All <700	0
Molybdenum	200	12(1)	ppm	235U	12(1)	154	<28-154	0
Tungsten	200	12(1)	ppm	235U	12(1)	98	<70-98	0
Vanadium	200	12(1)	ppm	235U	12(1)	56	<42-56	0
Boron Equivalent Cross Section	8	12	ppm	U	12	<1.8	All <1.8	0
Uranium-235	0.7103	12	Percent	Weight	12	0.71113	0.7110-0.7114	0
Cylinder Pressure	75	12	PSIA	At 200°F	12	64.7	55-68	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification.

Table 8-75

SPECIFICATION ANALYSES FOR ELDORADO NUCLEAR NATURAL FEED

CY-1975

Measurement	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)	Specification						
Iridium Hexafluoride	99.5		Percent	Weight	10	99.992	99.97-100	0
Iridium	(3)		Percent	Weight	10	67.613	67.60-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	10	<0.01	All <0.01	0
Antimony	1		ppm	U	10	<1	All <1	0
Bromine	5		ppm	U	10	<1	All <1	0
Chlorine	100		ppm	U	10	36.7	25-50	0
Fluorine	1		ppm	U	10	<0.2	All <0.2	0
Phosphorus	50		ppm	U	10	<20	All <20	0
Sulfur	1		ppm	U	10	<1	All <1	0
Silicon	100		ppm	U	10	11.5	<2-33	0
Tantalum	1		ppm	U	10(6)	<0.5	All <0.5	0
Titanium	1		ppm	U	10	0.3	<0.3-0.3	21
Volatile Fluorides	300		ppm	U	10(1)	13.4	2-29	0
Chromium	1500		ppm	U	10	<700	All <700	0
Molybdenum	200		ppm	235U	10	28	<28-28	0
Nickel	200		ppm	235U	10(1)	<70	All <70	0
Vanadium	200		ppm	235U	10(4)	115.5	<42-168	0
Iron Equivalent Cross Section	8		ppm	U	10	<1.8	All <1.8	0
Iridium-235	0.7103		Percent	Weight	10	0.71092	0.7108-0.7111	0
Cylinder Pressure	75		PSIA	At 200°F	8	59.5	50-68	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification.

Table 8-76

SPECIFICATION ANALYSES FOR ELDORADO NUCLEAR NATURAL FEED

CY-1976

Measurement	Feed Specification Level (1)	Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
Uranium Hexafluoride	99.5	Percent	Weight	9	99.990	99.97-100	0
Uranium	(3)	Percent	Weight	9	67.611	67.60-67.62	-
Hydrocarbons, etc.	0.01	Percent	Mole	9	<0.01	All <0.01	0
Antimony	1	ppm	U	9	<1	All <1	0
Bromine	5	ppm	U	9	<1	All <1	0
Chlorine	100	ppm	U	9	34.0	21-71	0
Niobium	1	ppm	U	9	<0.2	All <0.2	0
Phosphorus	50	ppm	U	9	<20	All <20	0
Ruthenium	1	ppm	U	9	<1	All <1	0
Silicon	100	ppm	U	9	10.7	3-31	0
Tantalum	1	ppm	U	9	<0.5	All <0.5	0
Titanium	1	ppm	U	9	<0.3	All <0.3	0
Nonvolatile Fluorides	300	ppm	U	9	41.2	15-78	0
Chromium	1500	ppm	²³⁵ U	9	<700	All <700	0
Molybdenum	200	ppm	²³⁵ U	9(1)	56	<28-56	0
Tungsten	200	ppm	²³⁵ U	9	<70	All <70	0
Vanadium	200	ppm	²³⁵ U	9	<42	All <42	0
Boron Equivalent Cross Section	8	ppm	U	9	<1.8	All <1.8	0
Uranium-235	0.7103	Percent	Weight	9	0.71106	0.7109-0.7113	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 8-77

SPECIFICATION ANALYSES FOR ELDORADO NUCLEAR NATURAL FEED

CY-1977

Measurement	Feed Specification		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Level (1)							
Uranium Hexafluoride	99.5		Percent	Weight	12	99.980	99.93-100	0
Uranium	(3)		Percent	Weight	12	67.605	67.57-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	12	<0.01	All <0.01	0
Antimony	1		ppm	U	12	<1	All <1	0
Bromine	5		ppm	U	12(1)	3.9	<1-3.9	0
Chlorine	100		ppm	U	12	54.1	33-77	0
Niobium	1		ppm	U	12	<0.2	All <0.2	0
Phosphorus	50		ppm	U	12	<20	All <20	0
Ruthenium	1		ppm	U	12	<1	All <1	0
Silicon	100		ppm	U	12(7)	7.2	<2-16	0
Tantalum	1		ppm	U	12	<0.5	All <0.5	0
Titanium	1		ppm	U	12	<0.3	All <0.3	0
Nonvolatile Fluorides	300		ppm	U	12	39.0	2-94	0
Chromium	1500		ppm	²³⁵ U	12	<700	All <700	0
Molybdenum	200		ppm	²³⁵ U	12	<28	All <28	0
Tungsten	200		ppm	²³⁵ U	12	<70	All <70	0
Vanadium	200		ppm	²³⁵ U	12	<42	All <42	0
Boron Equivalent Cross Section	8		Percent	U	12(1)	5	<1.8-5	0
Uranium-235	0.7103		Percent	Weight	12	0.71102	0.7109-0.7112	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 8-78

SPECIFICATION ANALYSES FOR ELDORADO NUCLEAR NATURAL FEED

CY-1978

Measurement	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)	Average						
Uranium Hexafluoride	99.5	99.978	Percent	Weight	9	99.978	99.96-100	0
Uranium	(3)	67.600	Percent	Weight	9	67.600	67.59-67.62	-
Hydrocarbons, etc.	0.01	<0.01	Percent	Mole	8	<0.01	All <0.01	0
Antimony	1	<1	ppm	U	8	<1	All <1	0
Bromine	5	<1	ppm	U	8	<1	All <1	0
Chlorine	100	61.6	ppm	U	8	61.6	21-85	0
Niobium	1	<0.2	ppm	U	8	<0.2	All <0.2	0
Phosphorus	50	<20	ppm	U	8	<20	All <20	0
Ruthenium	1	<1	ppm	U	8	<1	All <1	0
Silicon	100	6.3	ppm	U	8(6)	6.3	<2-10	0
Tantalum	1	<0.5	ppm	U	8	<0.5	All <0.5	0
Titanium	1	<0.3	ppm	U	8	<0.3	All <0.3	0
Nonvolatile Fluorides	300	25.5	ppm	U	8	25.5	3-69	0
Chromium	1500	<700	ppm	235U	8	<700	All <700	0
Molybdenum	200	371	ppm	235U	9(2)	371	<28-672	1
Tungsten	200	<70	ppm	235U	8	<70	All <70	0
Vanadium	200	<42	ppm	235U	8	<42	All <42	0
Boron Equivalent Cross Section	8	<1.8	ppm	U	8	<1.8	All <1.8	0
Uranium-235	0.7103	0.71101	Percent	Weight	9	0.71101	0.7109-0.7111	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 8-79

SPECIFICATION ANALYSES FOR ELDORADO NUCLEAR NATURAL FEED

CY-1979

Measurement	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)							
Uranium Hexafluoride	99.5		Percent	Weight	13	99.975	99.91-100	0
Uranium	(3)		Percent	Weight	13	67.602	67.56-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	13	<0.01	All <0.01.	0
Antimony	1		ppm	U	13	<1	All <1	0
Bromine	5		ppm	U	13(3)	1.7	<1-2.2	0
Chlorine	100		ppm	U	13	37.3	17-51	0
Niobium	1		ppm	U	13	<0.2	All <0.2	0
Phosphorus	50		ppm	U	13	<20	All <20	0
Ruthenium	1		ppm	U	13	<1	All <1	0
Silicon	100		ppm	U	13(10)	3.9	<2-8	0
Tantalum	1		ppm	U	13	<0.5	All <0.5	0
Titanium	1		ppm	U	13(1)	1.0	<0.3-1	0
Nonvolatile Fluorides	300		ppm	U	13	47.9	14-95	0
Chromium	1500		ppm	235U	13	<700	All <700	0
Molybdenum	200		ppm	235U	13(1)	140	<28-140	0
Tungsten	200		ppm	235U	13	<70	All <70	0
Vanadium	200		ppm	235U	13	<42	All <42	0
Boron Equivalent Cross Section	8		ppm	U	13	<1.8	All <1.8	0
Uranium-235	0.7103		Percent	Weight	13	0.71102	0.7108-0.7113	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 8-80

SPECIFICATION ANALYSES FOR ELDORADO NUCLEAR NATURAL FEED

CY-1980

Measurement	Feed Specification		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Level (1)	Specification						
Uranium Hexafluoride	99.5		Percent	Weight	72	99.955	99.78-100	0
Uranium	(3)		Percent	Weight	72	67.588	67.47-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	29	<0.01	All <0.01	0
Antimony	1		ppm	U	29	<1	All <1	0
Bromine	5		ppm	U	29	<1	All <1	0
Chlorine	100		ppm	U	29	58.4	30-107	1
Niobium	1		ppm	U	29	<0.2	All <0.2	0
Phosphorus	50		ppm	U	29	<20	All <20	0
Ruthenium	1		ppm	U	29	<1	All <1	0
Silicon	100		ppm	U	29(27)	9.3	<2-22	0
Tantalum	1		ppm	U	29	<0.5	All <0.5	0
Titanium	1		ppm	U	29	<0.3	All <0.3	0
Nonvolatile Fluorides	300		ppm	U	72(70)	39.6	<1-103	0
Chromium	1500		ppm	235U	72	<700	All <700	0
Molybdenum	200		ppm	235U	72(35)	142	<28-252	3
Tungsten	200		ppm	235U	29	<70	All <70	0
Vanadium	200		ppm	235U	29	<42	All <42	0
Boron Equivalent Cross Section	8		ppm	U	29	<1.8	All <1.8	0
Uranium-235	0.7103		Percent	Weight	72	0.71096	0.7107-0.7112	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 9-74

SPECIFICATION ANALYSES FOR COMHUREX NATURAL FEED

CY-1974

Measurement	Feed		Units	Basis	Number of Samples. (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)							
Uranium Hexafluoride	99.5		Percent	Weight	11	99.966	99.91-100	0
Uranium	(3)		Percent	Weight	11	67.595	67.56-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	11	<0.01	All <0.01	0
Antimony	1		ppm	U	11	<1	All <1	0
Bromine	5		ppm	U	11	1.2	All <1	0
Chlorine	100		ppm	U	11	41.5	31-56	0
Niobium	1		ppm	U	11	<0.2	All <0.2	0
Phosphorus	50		ppm	U	11	<20	All <20	0
Ruthenium	1		ppm	U	11	<1	All <1	0
Silicon	100		ppm	U	11	14.1	2-64	0
Tantalum	1		ppm	U	11	<0.5	All <0.5	0
Titanium	1		ppm	U	11	<0.3	All <0.3	0
Nonvolatile Fluorides	300		ppm	U	11	55.0	8-106	0
Chromium	1500		ppm	235U	11	<700	<700	0
Molybdenum	200		ppm	235U	11(1)	140	<28-140	0
Tungsten	200		ppm	235U	11	<70	All <70	0
Vanadium	200		ppm	235U	11	<42	All <42	0
Boron Equivalent Cross Section	8		ppm	U	11	<1.8	All <1.8	0
Uranium-235	0.7103		Percent	Weight	11	0.71104	0.7108-0.7112	0
Cylinder Pressure	75		PSIA	At 200°F	11	65.8	63-67	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification.

Table 9-75

SPECIFICATION ANALYSES FOR COMHUREX NATURAL FEED

CY-1975

Measurement	Feed Specification Level (1)	Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
Uranium Hexafluoride	99.5	Percent	Weight	11	99.990	99.96-100	0
Uranium	(3)	Percent	Weight	11	67.612	67.59-67.62	-
Hydrocarbons, etc.	0.01	Percent	Mole	11	<0.01	All <0.01	0
Antimony	1	ppm	U	11	<1	All <1	0
Bromine	5	ppm	U	11	<1	All <1	0
Chlorine	100	ppm	U	11	39.0	28-48	0
Niobium	1	ppm	U	11	<0.2	All <0.2	0
Phosphorus	50	ppm	U	11	<20	All <20	0
Ruthenium	1	ppm	U	11	<1	All <1	0
Silicon	100	ppm	U	11(5)	4.4	<2-8	0
Tantalum	1	ppm	U	11	<0.5	All <0.5	0
Titanium	1	ppm	U	11	<0.3	All <0.3	0
Nonvolatile Fluorides	300	ppm	U	11	14.2	2-36	0
Chromium	1500	ppm	235U	11	<700	All <700	0
Molybdenum	200	ppm	235U	11	<28	All <28	0
Tungsten	200	ppm	235U	11	<70	All <70	0
Vanadium	200	ppm	235U	11	<42	All <42	0
Boron Equivalent Cross Section	8	ppm	U	11	<1.8	All <1.8	0
Uranium-235	0.7103	Percent	Weight	11	0.71095	0.7106-0.7112	0
Cylinder Pressure	75	PSIA	At 200°F	11	53.5	50-65	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification.

Table 9-76

SPECIFICATION ANALYSES FOR COMHUREX NATURAL FEED

CY-1976

Measurement	Feed Specification		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Level (1)							
Uranium Hexafluoride	99.5		Percent	Weight	21	99.977	99.94-100	0
Uranium	(3)		Percent	Weight	21	67.604	67.58-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	21	<0.01	A11 <0.01	0
Antimony	1		ppm	U	21	<1	A11 <1	0
Bromine	5		ppm	U	21	<1	A11 <1	0
Chlorine	100		ppm	U	21	51.4	17-59	0
Niobium	1		ppm	U	21	<0.2	A11 <0.2	0
Phosphorus	50		ppm	U	21	<20	A11 <20	0
Ruthenium	1		ppm	U	21	<1	A11 <1	0
Silicon	100		ppm	U	21	9.9	<2-26	0
Tantalum	1		ppm	U	21	<0.5	A11 <0.5	0
Titanium	1		ppm	U	21	0.3	<0.3-0.3	0
Nonvolatile Fluorides	300		ppm	U	21	40.2	6-100	0
Chromium	1500		ppm	235U	21	<700	A11 <700	0
Molybdenum	200		ppm	235U	21	<28	A11 <28	0
Tungsten	200		ppm	235U	21	<70	A11 <70	0
Vanadium	200		ppm	235U	21	<42	A11 <42	0
Boron Equivalent Cross Section	8		ppm	U	21	<1.8	A11 <1.8	0
Uranium-235	0.7103		Percent	Weight	21	0.71090	0.7107-0.7110	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 9-77

SPECIFICATION ANALYSES FOR COMHUREX NATURAL FEED

CY-1977

Measurement	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)	Specification						
Uranium Hexafluoride	99.5		Percent	Weight	9	99.984	99.97-100	0
Uranium	(3)		Percent	Weight	9	67.610	67.60-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	9	<0.01	All <0.01	0
Antimony	1		ppm	U	9	<1	All <1	0
Bromine	5		ppm	U	9	<1	All <1	0
Chlorine	100		ppm	U	9	49.0	38-80	0
Niobium	1		ppm	U	9	<0.2	All <0.2	0
Phosphorus	50		ppm	U	9	<20	All <20	0
Ruthenium	1		ppm	U	9	<1	All <1	0
Silicon	100		ppm	U	9(2)	7.5	<2-12	0
Tantalum	1		ppm	U	9	<0.5	All <0.5	0
Titanium	1		ppm	U	9	<0.3	All <0.3	0
Nonvolatile Fluorides	300		ppm	U	9	33.6	5-95	0
Chromium	1500		ppm	235U	9	<700	All <700	0
Molybdenum	200		ppm	235U	9	<28	All <28	0
Tungsten	200		ppm	235U	9	<70	All <70	0
Vanadium	200		ppm	235U	9	<42	All <42	0
Boron Equivalent Cross Section	8		ppm	U	9	<1.8	All <1.8	0
Uranium-235	0.7103		Percent	Weight	9	0.71070	0.7096-0.7110	1

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 9-78

SPECIFICATION ANALYSES FOR COMHUREX NATURAL FEED

CY-1978

Measurement	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)	Average						
Uranium Hexafluoride	99.5	99.978	Percent	Weight	8	99.978	99.97-99.99	0
Uranium	(3)	67.604	Percent	Weight	8	67.604	67.60-67.61	-
Hydrocarbons, etc.	0.01	<0.01	Percent	Mole	8	<0.01	All <0.01	0
Antimony	1	<1	ppm	U	8	<1	All <1	0
Bromine	5	<1	ppm	U	8	<1	All <1	0
Chlorine	100	55.8	ppm	U	8	55.8	36-89	0
Niobium	1	<0.2	ppm	U	8	<0.2	All <0.2	0
Phosphorus	50	<20	ppm	U	8	<20	All <20	0
Ruthenium	1	<1	ppm	U	8	<1	All <1	0
Silicon	100	5.7	ppm	U	8(6)	5.7	<2-12	0
Tantalum	1	<0.5	ppm	U	8	<0.5	All <0.5	0
Titanium	1	<0.3	ppm	U	8	<0.3	All <0.3	0
Nonvolatile Fluorides	300	26.6	ppm	U	8	26.6	10-65	0
Chromium	1500	<700	ppm	235U	8	<700	All <700	0
Molybdenum	200	<28	ppm	235U	8	<28	All <28	0
Tungsten	200	<70	ppm	235U	8	<70	All <70	0
Vanadium	200	<42	ppm	235U	8	<42	All <42	0
Boron Equivalent Cross Section	8	5	ppm	U	8(1)	5	<1.8-5	0
Uranium-235	0.7103	0.71094	Percent	Weight	8	0.71094	0.7107-0.7112	0

(1) All levels are maximums except UF₆ and 235U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 9-79

SPECIFICATION ANALYSES FOR COMHUREX NATURAL FEED

CY-1979

Measurement	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)	Level (1)						
Uranium Hexafluoride	99.5		Percent	Weight	16	99.977	99.93-100	0
Uranium	(3)		Percent	Weight	16	67.603	67.57-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	16	<0.01	All <0.01	0
Antimony	1		ppm	U	16	<1	All <1	0
Bromine	5		ppm	U	16(5)	1.8	<1-2.1	0
Chlorine	100		ppm	U	16	38.1	23-66	0
Niobium	1		ppm	U	16	<0.2	All <0.2	0
Phosphorus	50		ppm	U	16	<20	All <20	0
Ruthenium	1		ppm	U	16	<1	All <1	0
Silicon	100		ppm	U	16	6.4	<2-10	0
Tantalum	1		ppm	U	16(9)	<0.5	All <0.5	0
Titanium	1		ppm	U	16	<0.3	All <0.3	0
Nonvolatile Fluorides	300		ppm	U	16	37.8	12-103	0
Chromium	1500		ppm	235U	16	<700	All <700	0
Molybdenum	200		ppm	235U	16	<28	All <28	0
Tungsten	200		ppm	235U	16	<70	All <70	0
Vanadium	200		ppm	235U	16	<42	All <42	0
Boron Equivalent Cross Section	8		ppm	U	16	<1.8	All <1.8	0
Uranium-235	0.7103		Percent	Weight	16	0.71016	0.7070-0.7110	0

(1) All levels are maximums except UF₆ and 235U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 9-80

SPECIFICATION ANALYSES FOR COMHUREX NATURAL FEED

CY-1980

Measurement	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)	Specification						
Uranium Hexafluoride	99.5		Percent	Weight	41	99.972	99.93-100	0
Uranium	(3)		Percent	Weight	41	67.600	67.57-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	15	<0.01	All <0.01	0
Antimony	1		ppm	U	15	<1	All <1	0
Bromine	5		ppm	U	15(1)	1	<1-1	0
Chlorine	100		ppm	U	15	66.1	36-102	0
Niobium	1		ppm	U	15	<0.2	All <0.2	1
Phosphorus	50		ppm	U	15	<20	All <20	0
Ruthenium	1		ppm	U	15	<1	All <20	0
Silicon	100		ppm	U	15	10.3	5-22	0
Tantalum	1		ppm	U	15	<0.5	All <0.5	0
Titanium	1		ppm	U	15(1)	0.6	<0.3-0.6	0
Nonvolatile Fluorides	300		ppm	U	41	37.4	6-159	0
Chromium	1500		ppm	235U	41	<700	All <700	0
Molybdenum	200		ppm	235U	41(12)	119	<28-168	0
Tungsten	200		ppm	235U	15	<70	All <70	0
Vanadium	200		ppm	235U	15	<42	All <42	0
Boron Equivalent Cross Section	8		ppm	U	15(1)	2.0	<1.8-2	0
Uranium-235	0.7103		Percent	Weight	41	0.71080	0.7106-0.7110	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 10-74

SPECIFICATION ANALYSES FOR KERR-MCGEE NATURAL FEED

CY-1974

Measurement	Feed Specification		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Level (1)	Level (1)						
Uranium Hexafluoride	99.5		Percent	Weight	12	99.975	99.91-100	0
Uranium	(3)		Percent	Weight	12	67.603	67.56-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	11	<0.01	A11 <0.01	0
Antimony	1		ppm	U	11	<1	A11 <1	0
Bromine	5		ppm	U	11(1)	1.6	<1-1.6	0
Chlorine	100		ppm	U	11	36.4	30-47	0
Niobium	1		ppm	U	11	<0.2	A11 <0.2	0
Phosphorus	50		ppm	U	11	<20	A11 <20	0
Ruthenium	1		ppm	U	11	<1	A11 <1	0
Silicon	100		ppm	U	11	8.7	2-25	0
Tantalum	1		ppm	U	11	<0.5	A11 <0.5	0
Titanium	1		ppm	U	11	<0.3	A11 <0.3	0
Nonvolatile Fluorides	300		ppm	U	11	43.0	9-70	0
Chromium	1500		ppm	235U	12(2)	1050	<700-1400	0
Molybdenum	200		ppm	235U	11(1)	28	<28-28	0
Tungsten	200		ppm	235U	11	<70	A11 <70	0
Vanadium	200		ppm	235U	11	<42	A11 <42	0
Boron Equivalent Cross Section	8		ppm	U	11	<1.8	A11 <1.8	0
Uranium-235	0.7103		Percent	Weight	12	0.71082	0.7106-0.7110	0
Cylinder Pressure	75		PSIA	At 200°F	12	65.2	65-67	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification.

Table 10-75

SPECIFICATION ANALYSES FOR KERR-MCGEE NATURAL FEED

CY-1975

Measurement	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)	Level (1)						
Uranium Hexafluoride	99.5		Percent	Weight	11	99.987	99.97-100	0
Uranium	(3)		Percent	Weight	11	67.611	67.60-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	11	<0.01	All <0.01	0
Antimony	1		ppm	U	11	<1	All <1	0
Bromine	5		ppm	U	11	<1	All <1	0
Chlorine	100		ppm	U	11	39.4	28-60	0
Niobium	1		ppm	U	11	<0.2	All <0.2	0
Phosphorus	50		ppm	U	11	<20	All <20	0
Ruthenium	1		ppm	U	11	<1	All <1	0
Silicon	100		ppm	U	11 (7)	7.0	<2-18	0
Tantalum	1		ppm	U	11	<0.5	All <0.5	0
Titanium	1		ppm	U	11	<0.3	All <0.3	0
Nonvolatile Fluorides	300		ppm	U	11	9.9	2-25	0
Chromium	1500		ppm	235U	11	<700	All <700	0
Molybdenum	200		ppm	235U	11	<28	All <28	0
Tungsten	200		ppm	235U	11	<70	All <70	0
Vanadium	200		ppm	235U	11	<42	All <42	0
Boron Equivalent Cross Section	8		ppm	U	11	<1.8	All <1.8	0
Uranium-235	0.7103		Percent	Weight	11	0.71088	0.7108-0.7111	0
Cylinder Pressure	75		PSIA	At 200°F	7	59.6	50-67	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses used in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification.

Table 10-76

SPECIFICATION ANALYSES FOR KERR-MCGEE NATURAL FEED

CY-1976

Measurement	Feed Specification Level (1)	Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
Uranium Hexafluoride	99.5	Percent	Weight	6	99.982	99.96-100	0
Uranium	(3)	Percent	Weight	6	67.607	67.59-67.62	-
Hydrocarbons, etc.	0.01	Percent	Mole	6	<0.01	A11 <0.01	0
Antimony	1	ppm	U	6	<1	A11 <1	0
Bromine	5	ppm	U	6	<1	A11 <1	0
Chlorine	100	ppm	U	6	32.2	20-62	0
Niobium	1	ppm	U	6	<0.2	A11 <0.2	0
Phosphorus	50	ppm	U	6	<20	A11 <20	0
Ruthenium	1	ppm	U	6	<1	A11 <1	0
Silicon	100	ppm	U	6	8.8	<2-20	0
Tantalum	1	ppm	U	6	<0.5	A11 <0.5	0
Titanium	1	ppm	U	6	<0.3	A11 <0.3	0
Nonvolatile Fluorides	300	ppm	U	6	38.0	12-107	0
Chromium	1500	ppm	235U	6	<700	A11 <700	0
Molybdenum	200	ppm	235U	6	<28	A11 <28	0
Tungsten	200	ppm	235U	6	<70	A11 <70	0
Vanadium	200	ppm	235U	6	<42	A11 <42	0
Boron Equivalent Cross Section	8	ppm	U	6	<1.8	A11 <1.8	0
Uranium-235	0.7103	Percent	Weight	6	0.71083	0.7108-0.7109	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 10-77

SPECIFICATION ANALYSES FOR KERR-MCGEE NATURAL FEED

CY-1977

Measurement	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)	Specification						
Uranium Hexafluoride	99.5		Percent	Weight	29	99.992	99.96-100	0
Uranium	(3)		Percent	Weight	29	67.614	67.59-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	29	<0.01	All <0.01	0
Antimony	1		ppm	U	29	<1	All <1	0
Bromine	5		ppm	U	29	<1	All <1	0
Chlorine	100		ppm	U	29	50.5	25-69	0
Niobium	1		ppm	U	29	<0.2	All <0.2	0
Phosphorus	50		ppm	U	29	<20	All <20	0
Ruthenium	1		ppm	U	29	<1	All <1	0
Silicon	100		ppm	U	29(6)	7.2	<2-15	0
Tantalum	1		ppm	U	29	<0.5	All <0.5	0
Titanium	1		ppm	U	29	<0.3	All <0.3	0
Nonvolatile Fluorides	300		ppm	U	29(26)	23.7	<1-90	0
Chromium	1500		ppm	235U	29	<700	All <700	0
Molybdenum	200		ppm	235U	29	<28	All <28	0
Tungsten	200		ppm	235U	29	<70	All <70	0
Vanadium	200		ppm	235U	29	<42	All <42	0
Boron Equivalent Cross Section	8		ppm	U	29	<1.8	All <1.8	0
Uranium-235	0.7103		Percent	Weight	29	0.71085	0.7106-0.7110	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 10-78

SPECIFICATION ANALYSES FOR KERR-MCGEE NATURAL FEED

CY-1978

Measurement	Feed Specification Level (1)	Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
Uranium Hexafluoride	99.5	Percent	Weight	20	99.978	99.94-100	0
Uranium	(3)	Percent	Weight	20	67.604	67.58-67.62	-
Hydrocarbons, etc.	0.01	Percent	Mole	20	<0.01	All <0.01	0
Antimony	1	ppm	U	20	<1	All <1	0
Bromine	5	ppm	U	20	<1	All <1	0
Chlorine	100	ppm	U	20	51.1	4-82	0
Niobium	1	ppm	U	20	<0.2	All <0.2	0
Phosphorus	50	ppm	U	20	<20	All <20	0
Ruthenium	1	ppm	U	20	<1	All <1	0
Silicon	100	ppm	U	20(8)	8.9	<2-20	0
Tantalum	1	ppm	U	20	<0.5	All <0.5	0
Titanium	1	ppm	U	20	<0.3	All <0.3	0
Nonvolatile Fluorides	300	ppm	U	20(19)	47.2	<1-149	0
Chromium	1500	ppm	235U	20	<700	All <700	0
Molybdenum	200	ppm	235U	20	<28	All <28	0
Tungsten	200	ppm	235U	20	<70	All <70	0
Vanadium	200	ppm	235U	20	<42	All <42	0
Boron Equivalent Cross Section	8	ppm	U	20(1)	4.0	<1.8-4	0
Uranium-235	0.7103	Percent	Weight	20	0.71085	0.7107-0.7110	0

(1) All levels are maximums except UF₆ and 235U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 10-79

SPECIFICATION ANALYSES FOR KERR-MCGEE NATURAL FEED

CY-1979

Measurement	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)	Level (1)						
Uranium Hexafluoride	99.5		Percent	Weight	34	99.976	99.90-100	0
Uranium	(3)		Percent	Weight	34	67.602	67.55-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	34	<0.01	All <0.01	0
Antimony	1		ppm	U	34	<1	All <1	0
Bromine	5		ppm	U	34(6)	1.6	<1-2.5	0
Chlorine	100		ppm	U	34	44.9	15-82	0
Niobium	1		ppm	U	34	<0.2	All <0.2	0
Phosphorus	50		ppm	U	34	<20	All <20	0
Ruthenium	1		ppm	U	34	<1	All <1	0
Silicon	100		ppm	U	34(26)	4.3	<2-20	0
Tantalum	1		ppm	U	34	<0.5	All <0.5	0
Titanium	1		ppm	U	34(2)	4.6	<0.3-8.5	0
Nonvolatile Fluorides	300		ppm	U	34	47.7	5-240	1
Chromium	1500		ppm	235U	34	<700	All <700	0
Molybdenum	200		ppm	235U	34	<28	All <28	0
Tungsten	200		ppm	235U	34	<70	All <70	0
Vanadium	200		ppm	235U	34	<42	All <42	0
Boron Equivalent Cross Section	8		ppm	U	34	<1.8	All <1.8	0
Uranium-235	0.7103		Percent	Weight	34	0.71084	0.7104-0.7110	0

(1) All levels are maximums except UF₆ and 235U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 10-80

SPECIFICATION ANALYSES FOR KERR-MCGEE NATURAL FEED

CY-1980

Measurement	Feed Specification Level (1)	Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
Uranium Hexafluoride	99.5	Percent	Weight	77	99.958	99.87-100	0
Uranium	(3)	Percent	Weight	77	67.590	67.53-67.62	-
Hydrocarbons, etc.	0.01	Percent	Mole	22	<0.01	All <0.01	0
Antimony	1	ppm	U	22	<1	All <1	0
Bromine	5	ppm	U	22	<1	All <1	0
Chlorine	100	ppm	U	22	49.2	7-86	0
Niobium	1	ppm	U	22	<0.2	All <0.2	0
Phosphorus	50	ppm	U	22	<20	All <20	0
Ruthenium	1	ppm	U	22	<1	All <1	0
Silicon	100	ppm	U	22(18)	7.8	<2-32	0
Tantalum	1	ppm	U	22	<0.5	All <0.5	0
Titanium	1	ppm	U	22	<0.3	All <0.3	0
Nonvolatile Fluorides	300	ppm	U	77	43.4	7-156	0
Chromium	1500	ppm	235U	77	<700	All <700	0
Molybdenum	200	ppm	235U	77(33)	106	<28-182	0
Tungsten	200	ppm	235U	22	<70	All <70	0
Vanadium	200	ppm	235U	22	<42	All <42	0
Boron Equivalent Cross Section	8	ppm	U	22	<1.8	All <1.8	0
Uranium-235	0.7103	Percent	Weight	77	0.71084	0.7106-0.7111	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 11-74

SPECIFICATION ANALYSES FOR BNFL NATURAL FEED

CY-1974

Measurement	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)	Specification						
Uranium Hexafluoride	99.5		Percent	Weight	9	99.974	99.94-100	0
Uranium	(3)		Percent	Weight	9	67.602	67.58-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	9	<0.01	All <0.01	0
Antimony	1		ppm	U	9	<1	All <1	0
Bromine	5		ppm	U	9	<1	All <1	0
Chlorine	100		ppm	U	9	<1	All <1	0
Niobium	1		ppm	U	9	32.7	25-45	0
Phosphorus	50		ppm	U	9	<0.2	All <0.2	0
Ruthenium	1		ppm	U	9	<20	All <20	0
Silicon	100		ppm	U	9	<1	All <1	0
Tantalum	1		ppm	U	9(7)	15.1	<2-25	0
Titanium	1		ppm	U	9	<0.5	All <0.5	0
Nonvolatile Fluorides	300		ppm	U	9	<0.3	All <0.3	0
Chromium	1500		ppm	U	9	23.8	3-38	0
Molybdenum	200		ppm	235U	9	<700	All <700	0
Tungsten	200		ppm	235U	9	<28	All <28	0
Vanadium	200		ppm	235U	9	<70	All <70	0
Boron Equivalent Cross Section	8		ppm	235U	9	<42	All <42	0
Uranium-235	0.7103		Percent	U	9	<1.8	All <1.8	0
Cylinder Pressure	75		PSIA	Weight At 200°F	9	0.71096	0.7107-0.7112	0
					9	65.7	65-67	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification.

Table 11-75

SPECIFICATION ANALYSES FOR BNFL NATURAL FEED

CY-1975

Measurement	Feed Specification		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Level (1)							
Uranium Hexafluoride	99.5		Percent	Weight	13	99.982	99.94-100	0
Uranium	(3)		Percent	Weight	13	67.608	67.58-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	13	<0.01	All <0.01	0
Antimony	1		ppm	U	13	<1	All <1	0
Bromine	5		ppm	U	13	<1	All <1	0
Chlorine	100		ppm	U	13(11)	36.9	<2-52	0
Niobium	1		ppm	U	13	<0.2	All <0.2	0
Phosphorus	50		ppm	U	13	<20	All <20	0
Ruthenium	1		ppm	U	13	<1	All <1	0
Silicon	100		ppm	U	13(6)	13.3	<2-55	0
Tantalum	1		ppm	U	13	<0.5	All <0.5	0
Titanium	1		ppm	U	13	<0.3	All <0.3	0
Nonvolatile Fluorides	300		ppm	U	13(12)	32.9	<1-108	0
Chromium	1500		ppm	235U	13	<700	All <700	0
Molybdenum	200		ppm	235U	13	<28	All <28	0
Tungsten	200		ppm	235U	13	<70	All <70	0
Vanadium	200		ppm	235U	13	<42	All <42	0
Boron Equivalent Cross Section	8		ppm	U	13	<1.8	All <1.8	0
Uranium-235	0.7103		Percent	Weight	13	0.71112	0.7109-0.7113	0
Cylinder Pressure	75		PSIA	At 200°F	10	54.9	50-66	0

(1) All levels are maximums except UF₆ and 235U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e. "less than" results are excluded.

(3) Not a specific specification.

Table 11-76

SPECIFICATION ANALYSES FOR BNFL NATURAL FEED

CY-1976

Measurement	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)	Specification						
Uranium Hexafluoride	99.5		Percent	Weight	10	99.987	99.97-100	0
Uranium	(3)		Percent	Weight	10	67.610	67.60-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	10	<0.01	All <0.01	0
Antimony	1		ppm	U	10	<1	All <1	0
Bromine	5		ppm	U	10	<1	All <1	0
Chlorine	100		ppm	U	10	40.2	17-64	0
Niobium	1		ppm	U	10	<0.2	All <0.2	0
Phosphorus	50		ppm	U	10	<20	All <20	0
Ruthenium	1		ppm	U	10	<1	All <1	0
Silicon	100		ppm	U	10(7)	8.0	3-20	0
Tantalum	1		ppm	U	10	<0.5	All <0.5	0
Titanium	1		ppm	U	10	<0.3	All <0.3	0
Nonvolatile Fluorides	300		ppm	U	10(9)	25.3	<1-64	0
Chromium	1500		ppm	235U	10	<700	All <700	0
Molybdenum	200		ppm	235U	10	<28	All <28	0
Tungsten	200		ppm	235U	10	<70	All <70	0
Vanadium	200		ppm	235U	10	<42	All <42	0
Boron Equivalent Cross Section	8		ppm	U	10	<1.8	All <1.8	0
Uranium-235	0.7103		Percent	Weight	10	0.71117	0.7111-0.7113	0

(1) All levels are maximums except UF₆ and ²³⁵U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 11-77

SPECIFICATION ANALYSES FOR BNFL NATURAL FEED

CY-1977

Measurement	Feed Specification		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Level (1)							
Uranium Hexafluoride	99.5		Percent	Weight	9	99.988	99.97-100	0
Uranium	(3)		Percent	Weight	9	67.610	67.60-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	9	<0.01	All <0.01	0
Antimony	1		ppm	U	9	<1	All <1	0
Bromine	5		ppm	U	9	<1	All <1	0
Chlorine	100		ppm	U	9	50.6	22-130	0
Niobium	1		ppm	U	9	<0.2	All <0.2	1
Phosphorus	50		ppm	U	9	<20	All <20	0
Ruthenium	1		ppm	U	9	<1	All <1	0
Silicon	100		ppm	U	9(4)	5.0	<2-8	0
Tantalum	1		ppm	U	9	<0.5	All <0.5	0
Titanium	1		ppm	U	9	<0.3	All <0.3	0
Nonvolatile Fluorides	300		ppm	U	9(8)	44.4	<1-110	0
Chromium	1500		ppm	235U	9	<700	All <700	0
Molybdenum	200		ppm	235U	9	<28	All <28	0
Tungsten	200		ppm	235U	9	<70	All <70	0
Vanadium	200		ppm	235U	9	<42	All <42	0
Boron Equivalent Cross Section	8		ppm	U	9	<1.8	All <1.8	0
Uranium-235	0.7103		Percent	Weight	9	0.71113	0.7111-0.7112	0

(1) All levels are maximums except UF₆ and 235U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 11-78

SPECIFICATION ANALYSES FOR BNFL NATURAL FEED

CY-1978

Measurement	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)	Number						
Iranium Hexafluoride	99.5	15	Percent	Weight	15	99.985	99.96-100	0
Iranium	(3)	15	Percent	Weight	15	67.608	67.59-67.62	-
Hydrocarbons, etc.	0.01	15	Percent	Mole	15	<0.01	All <0.01	0
Antimony	1	15	ppm	U	15	<1	All <1	0
Bromine	5	15	ppm	U	15	<1	All <1	0
Chlorine	100	15	ppm	U	15	56.2	26-88	0
Fluorine	1	15	ppm	U	15	<0.2	All <0.2	0
Phosphorus	50	15	ppm	U	15	<20	All <20	0
Sulfur	1	15	ppm	U	15	<1	All <1	0
Silicon	100	15(8)	ppm	U	15(8)	4.1	<2-11	0
Tantalum	1	15	ppm	U	15	<0.5	All <0.5	0
Titanium	1	15	ppm	U	15	<0.3	All <0.3	0
Volatiles	300	15	ppm	U	15	26.3	7-74	0
Fluorides	1500	15	ppm	235U	15	<700	All <700	0
Bromine	200	15	ppm	235U	15	<28	All <28	0
Uranium-235	200	15	ppm	235U	15	<70	All <70	0
Uranium-238	200	15	ppm	235U	15	<42	All <42	0
Iron Equivalent Cross Section	8	15(1)	ppm	U	15(1)	4.0	<1.8-4	0
Uranium-235	0.7103	15	Percent	Weight	15	0.71107	0.7110-0.7112	0

1) All levels are maximums except UF₆ and 235U which are minimums.

2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 11-79

SPECIFICATION ANALYSES FOR BNFL NATURAL FEED

CY-1979

Measurement	Feed Specification		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Level (1)	Level (1)						
Uranium Hexafluoride	99.5		Percent	Weight	5	99.980	99.94-100	0
Uranium	(3)		Percent	Weight	5	67.606	67.58-62.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	5	<0.01	All <0.01	0
Antimony	1		ppm	U	5	<1	All <1	0
Bromine	5		ppm	U	5(1)	1.2	<1-1.2	0
Chlorine	100		ppm	U	5	32.4	21-49	0
Niobium	1		ppm	U	5	<0.2	All <0.2	0
Phosphorus	50		ppm	U	5	<20	All <20	0
Ruthenium	1		ppm	U	5	<1	All <1	0
Silicon	100		ppm	U	5(4)	5.5	<2-10	0
Tantalum	1		ppm	U	5(1)	1.0	<0.5-1	0
Titanium	1		ppm	U	5	<0.3	All <0.3	0
Nonvolatile Fluorides	300		ppm	U	5	27.4	5-50	0
Chromium	1500		ppm	235U	5	<700	All <700	0
Molybdenum	200		ppm	235U	5	<28	All <28	0
Tungsten	200		ppm	235U	5	<70	All <70	0
Vanadium	200		ppm	235U	5	<42	All <42	0
Boron Equivalent Cross Section	8		ppm	U	5	<1.8	All <1.8	0
Uranium-235	0.7103		Percent	Weight	5	0.71110	0.7109-0.7112	0

(1) All levels are maximums except UF₆ and 235U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 11-80

SPECIFICATION ANALYSES FOR BNFL NATURAL FEED

CY-1980

Measurement	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)	Level (1)						
uranium Hexafluoride	99.5		Percent	Weight	13	99.953	99.91-100	0
uranium hydrocarbons, etc.	(3) 0.01		Percent	Weight	13	67.588	67.56-67.62	-
antimony	1		ppm	Mole	8	<0.1	All <0.01	0
chromine	5		ppm	U	8	<1	All <1	0
chlorine	100		ppm	U	8	<1	All <1	0
iodine	1		ppm	U	8	44.2	34-56	0
phosphorus	50		ppm	U	8	<0.2	All <0.2	0
methenium	1		ppm	U	8	<20	All <20	0
silicon	100		ppm	U	8	<1	All <1	0
antalum	1		ppm	U	8(6)	5.7	<2-12	0
titanium	1		ppm	U	8	<0.5	All <0.5	0
volatile Fluorides	300		ppm	U	8	<0.3	All <0.3	0
ironium	1500		ppm	U	13	36.0	7-77	0
lybdenum	200		ppm	235U	13	<700	All <700	0
ingsten	200		ppm	235U	13(1)	140	<28-140	0
niadium	200		ppm	235U	8	<70	All <70	0
Iron Equivalent Cross Section	8		ppm	235U	8	<42	All <42	0
uranium-235	0.7103		Percent	U	8	<1.8	All <1.8	0
				Weight	13	0.71105	0.7109-0.7112	0

(1) All levels are maximums except UF₆ and 235U which are minimums.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

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REACTOR RETURNS FEED

The following tables provide information concerning the required measurement, specification level, units and basis of results, the number of samples analyzed, the arithmetic average of observed results (less than values are excluded in averages), the range of results, and the number of results not conforming to specification.

The following tables are included:

Table Number	Vendor
12-77	Belgian for CY 1977
13-74, 13-76, 13-78, 13-79, 13-80	Comhurex for CY 1974, 1976, 1978-1980
14-79	German for CY 1979
15-80	Russian for CY 1980
16-74 through 16-78	BNFL for CY 1974-1978

The tables include all specifications for natural feed UF₆ and also include results for ²³⁴U, ²³⁵U, and ²³⁶U.

Table 12-77

SPECIFICATION ANALYSES FOR BELGIAN REACTOR RETURNS
CY-1977

Measurement	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)	Level (1)						
Uranium Hexafluoride	99.5		Percent	Weight	5	99.988	99.97-100	0
Uranium	(3)		Percent	Weight	5	67.610	67.60-67.62	-
Hydrocarbons, etc.	0.01		Percent	Mole	5	<0.01	All <0.01	0
Antimony	1		ppm	U	5	<1	All <1	0
Bromine	5		ppm	U	5	<1	All <1	0
Chlorine	100		ppm	U	5	55.2	44-72	0
Niobium	1		ppm	U	5	<0.2	All <0.2	0
Phosphorus	50		ppm	U	5	<20	All <20	0
Ruthenium	1		ppm	U	5	<1	All <1	0
Silicon	100		ppm	U	5	<1	All <1	0
Tantalum	1		ppm	U	5	6	All <2-6	0
Titanium	1		ppm	U	5	<0.5	All <0.5	0
Nonvolatile Fluorides			ppm	U	5	<0.3	All <0.3	0
Chromium	300		ppm	U	5	42.8	5-130	0
Molybdenum	1500		ppm	235U	5	<500	All <500	0
Tungsten	200		ppm	235U	5	<20	All <20	0
Vanadium	200		ppm	235U	5	<50	All <50	0
Uranium-233	200		ppm	235U	5	<35	All <35	0
Uranium-232	500		ppm	235U	5	<100	All <100	0
Boron Equivalent Cross Section	0.110		ppm	235U	5	0.041	0.012-0.07	0
Fission Product Gamma	8		ppm	U	5	<1.8	All <1.8	0
Fission Product Beta	20		Percent of Aged	U	5	<5	All <5	0
Transuranic Alpha	10		Natural U	U	5	<2	All <2	0
Uranium-234	1500		d/m/g	U	5	44.5	<14-75	0
Uranium-235	(3)		Percent Weight	U	5	0.011	All 0.011	0
Uranium-236	(3)		Percent Weight	U	5	1.0527	0.9729-1.1419	-
	(3)		Percent Weight	U	5	0.0286	0.027-0.030	-

(1) All levels are maximums except uranium hexafluoride which is a minimum.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e. "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 13-74

SPECIFICATION ANALYSES FOR COMHUREX REACTOR RETURNS
CY-1974

Measurements	Feed		Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
	Specification Level (1)							
uranium Hexafluoride	99.5		Percent	Weight	16	99.969	99.93-99.99	0
uranium	(3)		Percent	Weight	16	67.594	67.57-67.61	-
hydrocarbons, etc.	0.01		Percent	Mole	16	<0.01	All <0.01	0
antimony	1		ppm	U	16	<1	All <1	0
chromium	5		ppm	U	16	<1	All <1	0
chlorine	100		ppm	U	16	34.8	14-78	0
niobium	1		ppm	U	16	<0.2	All <0.2	0
phosphorus	50		ppm	U	16	<20	All <20	0
zinc	1		ppm	U	16	<1	All <1	0
silicon	100		ppm	U	16	<1	All <1	0
antimony	1		ppm	U	16	12.8	3-35	0
tin	1		ppm	U	16	<0.5	All <0.5	0
vanadium	1		ppm	U	16	<0.3	All <0.3	0
volatile Fluorides	300		ppm	U	16	61.8	31-120	0
chromium	1500		ppm	235U	16 (2)	362	<160-425	0
glycine	200		ppm	235U	16 (5)	38.8	<14-41	0
ingsten	200		ppm	235U	16	<26	All <26	0
niobium	200		ppm	235U	16	<44	All <44	0
uranium-233	500		ppm	235U	16	<100	All <100	0
uranium-232	0.110		ppm	235U	16 (10)	0.032	<0.005-0.054	0
Iron Equivalent Cross Section	8		Percent	U	16	<1.8	All <1.8	0
ission Product Gamma	20		Percent	Percent of Aged	16	<5	All <5	0
ission Product Beta	10		Percent	Natural U	16	<3	All <3	0
uranium Alpha	1500		d/m/g	U	16	250	66-476	0
uranium-234	(3)		Percent	Weight	16	0.013	0.010-0.023	-
uranium-235	(3)		Percent	Weight	16	1.5070	1.1510-3.1253	-
uranium-236	(3)		Percent	Weight	16	0.176	0.017-0.308	-
linder Pressure	75		PSIA	At 200°F	16	65.2	65-66	0

) All levels are maximums except uranium hexafluoride which is a minimum.

) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

) Not a specific specification.

Table 13-76
 SPECIFICATION ANALYSES FOR COMHUREX REACTOR RETURNS
 CY-1976

Measurement	Feed Specification Level (1)	Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
Uranium Hexafluoride	99.5	Percent	Weight	3	99.990	99.98-100	0
Uranium	(3)	Percent	Weight	3	67.607	67.60-67.62	-
Hydrocarbons, etc.	0.01	Percent	Mole	3	<0.01	All <0.01	0
Antimony	1	ppm	U	3	<1	All <1	0
Bromine	5	ppm	U	3	<1	All <1	0
Chlorine	100	ppm	U	3	59	35-86	0
Niobium	1	ppm	U	3	<0.2	All <0.2	0
Phosphorus	50	ppm	U	3	<20	All <20	0
Ruthenium	1	ppm	U	3	<1	All <1	0
Silicon	100	ppm	U	3	3.7	3-4	0
Tantalum	1	ppm	U	3	<0.5	All <0.5	0
Titanium	1	ppm	U	3	<0.3	All <0.3	0
Nonvolatile Fluorides	300	ppm	U	3	12	10-14	0
Chromium	1500	ppm	235U	3	<250	All <250	0
Molybdenum	200	ppm	235U	3	<10	All <10	0
Tungsten	200	ppm	235U	3	<15	All <15	0
Vanadium	200	ppm	235U	3	<25	All <25	0
Uranium-233	500	ppm	235U	3	<100	All <100	0
Uranium-232	0.110	ppm	235U	3	<0.05	All <0.05	0
Boron Equivalent Cross Section	8	ppm	U	3	<1.8	All <1.8	0
Fission Product Gamma	20	Percent of Aged		3	<5	All <5	0
Fission Product Beta	10	Natural U		3	<2	All <2	0
Transuranic Alpha	1500	d/m/g	U	3	<10	All <10	0
Uranium-234	(3)	Percent	Weight	3	0.0167	0.016-0.017	-
Uranium-235	(3)	Percent	Weight	3	2.0167	2.0154-2.0186	-
Uranium-236	(3)	Percent	Weight	3	0.022	0.021-0.033	-

(1) All levels are maximums except uranium hexafluoride which is a minimum.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 13-78
SPECIFICATION ANALYSES FOR COMHUREX REACTOR RETURNS
CY-1978

Measurement	Feed Specification Level (1)	Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
Uranium Hexafluoride	99.5	Percent Weight	Weight	12	99.989	99.90-100	0
Uranium	(3)	Percent Weight	Weight	12	67.598	67.55-67.62	-
Hydrocarbons, etc.	0.01	Percent Mole	Mole	12	<0.01	All <0.01	0
Antimony	1	ppm	U	12	<1	All <1	0
Bromine	5	ppm	U	12	<1	All <1	0
Chlorine	100	ppm	U	12	62.6	27-88	0
Niobium	1	ppm	U	12	<0.2	All <0.2	0
Phosphorus	50	ppm	U	12	<20	All <20	0
Ruthenium	1	ppm	U	12	<1	All <1	0
Silicon	100	ppm	U	12	11.0	<2-20	0
Tantalum	1	ppm	U	12	<0.5	All <0.5	0
Titanium	1	ppm	U	12	<0.3	All <0.3	0
Nonvolatile Fluorides	300	ppm	U	12	27.3	<3-110	0
Chromium	1500	ppm	235U	12	<750	All <750	0
Molybdenum	200	ppm	235U	12	79.3	<35-94	0
Tungsten	200	ppm	235U	12	<100	All <100	0
Vanadium	200	ppm	235U	12	<74	All <74	0
Uranium-233	500	ppm	235U	12	<300	All <300	0
Uranium-232	0.110	ppm	235U	12	0.022	<0.05-0.06	0
Boron Equivalent Cross Section	8	ppm	U	12	5.5	<1.8-5.5	0
Fission Product Gamma	20	Percent of Aged	U	12	<5	All <5	0
Fission Product Beta	10	Natural U	U	12	<2	All <2	0
Transuranic Alpha	1500	d/m/g	U	12	30.4	<4-54	0
Uranium-234	(3)	Percent Weight	Weight	12	0.013	0.0052-0.028	-
Uranium-235	(3)	Percent Weight	Weight	12	1.0459	0.6714-1.1664	-
Uranium-236	(3)	Percent Weight	Weight	12	0.152	0.0015-0.27	-

(1) All levels are maximums except uranium hexafluoride which is a minimum.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e. "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

SPECIFICATION ANALYSES FOR COMHUREX REACTOR RETURNS

CY-1979

Measurement	Feed Specification Level (1)	Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
Uranium Hexafluoride	99.5	Percent	Weight	11	99.981	99.94-99.99	0
Uranium	(3)	Percent	Weight	11	67.597	67.58-67.61	-
Hydrocarbons, etc.	0.01	Percent	Mole	11	<0.01	A11 <0.01	0
Antimony	1	ppm	U	11	<1	A11 <1	0
Bromine	5	ppm	U	11	<1	A11 <1	0
Chlorine	100	ppm	U	11	50.3	24-86	0
Niobium	1	ppm	U	11	<0.2	A11 <0.2	0
Phosphorus	50	ppm	U	11	<20	A11 <20	0
Ruthenium	1	ppm	U	11	<1	A11 <1	0
Silicon	100	ppm	U	11 (7)	5.4	<2-16	0
Tantalum	1	ppm	U	11	<0.5	A11 <0.5	0
Titanium	1	ppm	U	11	<0.3	A11 <0.3	0
Nonvolatile Fluorides	300	ppm	U	11 (10)	13.3	6-42	0
Chromium	1500	ppm	235U	11	<710	A11 <710	0
Molybdenum	200	ppm	235U	11	<40	A11 <40	0
Tungsten	200	ppm	235U	11	<100	A11 <100	0
Vanadium	200	ppm	235U	11	<60	A11 <60	0
Uranium-233	500	ppm	235U	11	<400	A11 <400	0
Uranium-232	0.110	ppm	235U	11 (2)	0.0015	<0.002-0.003	0
Boron Equivalent Cross Section	8	ppm	U	11	<1.8	A11 <1.8	0
Fission Product Gamma	20	Percent of Aged	U	11	<5	A11 <5	0
Fission Product Beta	10	Natural U	U	11	<0.3	A11 <0.3	0
Transuranic Alpha	1500	d/m/g	U	11 (5)	18.2	<2-90	0
Uranium-234	(3)	Percent	Weight	11	0.0068	0.0051-0.015	0
Uranium-235	(3)	Percent	Weight	11	1.0287	0.7948-2.2472	-
Uranium-236	(3)	Percent	Weight	11 (6)	0.0235	<0.0003-0.101	-

(1) All levels are maximums except uranium hexafluoride which is a minimum.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 13-80

SPECIFICATION ANALYSES FOR COMHUREX REACTOR RETURNS

CY-1980

Measurement	Feed Specification Level (1)	Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
Uranium Hexafluoride	99.5	Percent	Weight	28	99.964	99.90-100	0
Uranium	(3)	Percent	Weight	28	67.594	67.56-67.62	-
Hydrocarbons, etc.	0.01	Percent	Mole	28	<0.01	All <0.01	0
Antimony	1	ppm	U	28	<1	All <1	0
Bromine	5	ppm	U	28(1)	2	All <1-2	0
Chlorine	110	ppm	U	28	55.3	28-82	0
Niobium	1	ppm	U	28	<0.2	All <0.2	0
Phosphorus	50	ppm	U	28	<20	All <20	0
Ruthenium	1	ppm	U	28	<1	All <1	0
Silicon	100	ppm	U	28(25)	7.04	<2-22	0
Tantalum	1	ppm	U	28	<0.5	All <0.5	0
Titanium	1	ppm	U	28	<0.3	All <0.3	0
Nonvolatile Fluorides	200	ppm	U	28	52.9	3-115	0
Chromium	1500	ppm	235U	28	<620	All <620	0
Molybdenum	200	ppm	235U	28(3)	76	<9-100	0
Tungsten	200	ppm	235U	28	<60	All <60	0
Vanadium	200	ppm	235U	28	<40	All <40	0
Uranium-233	500	ppm	235U	28	<400	All <400	0
Uranium-232	0.110	ppm	235U	27(23)	0.0366	<0.01-0.08	0
Boron Equivalent Cross Section	8	ppm	U	28	<1.8	All <1.8	0
Fission Product Gamma	20	Percent of Aged		28(14)	6.4	<3-14	0
Fission Product Beta	10	Natural U		28(14)	3.0	<0.5-8	0
Transuranic Alpha	1500	d/m/g	U	28	41.8	2-280	0
Uranium-234	(3)	Percent Weight		28	0.0127	0.0053-0.021	0
Uranium-235	(3)	Percent Weight		28	1.0703	0.8051-2.2380	-
Uranium-236	(3)	Percent Weight		28	0.254	0.0085-0.41	-

(1) All levels are maximums except uranium hexafluoride which is a minimum.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORDGP

SPECIFICATION ANALYSES FOR GERMAN REACTOR RETURNS

CY-1979

Measurement	Feed Specification Level (1)	Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
Uranium Hexafluoride	99.5	Percent	Weight	2	99.990	All 99.99	0
Uranium	(3)	Percent	Weight	2	67.610	All 67.61	-
Hydrocarbons, etc.	0.01	Percent	Mole	2	<0.001	All <0.01	0
Antimony	1	ppm	U	2	<1	All <1	0
Bromine	5	ppm	U	2	<1	All <1	0
Chlorine	100	ppm	U	2	47	45-49	0
Niobium	1	ppm	U	2	<0.2	All <0.2	0
Phosphorus	50	ppm	U	2	<20	All <20	0
Ruthenium	1	ppm	U	2	<1	All <1	0
Silicon	100	ppm	U	2 (1)	12	<2-12	0
Tantalum	1	ppm	U	2	<0.5	All <0.5	0
Titanium	1	ppm	U	2	<0.3	All <0.3	0
Nonvolatile Fluorides	300	ppm	U	2	25.5	24-27	0
Chromium	1500	ppm	U	2	<248	All <248	0
Molybdenum	200	ppm	235U	2 (1)	20	<10-20	0
Tungsten	200	ppm	235U	2	<25	All <25	0
Vanadium	200	ppm	235U	2	<15	All <15	0
Uranium-233	500	ppm	235U	2	<100	All <100	0
Uranium-232	0.110	ppm	235U	2	<0.01	All <0.01	0
Boron Equivalent Cross Section	8	ppm	U	2 (1)	3.5	<1.8-3.5	0
Fission Product Gamma	20	Percent of Aged	U	2	<5	All <5	0
Fission Product Beta	10	Natural U	U	2	<0.3	All <0.3	0
Transuranic Alpha	1500	d/m/g	U	2	<5	All <5	0
Uranium-234	(3)	Percent	Weight	2	0.018	0.017-0.019	-
Uranium-235	(3)	Percent	Weight	2	2.01465	2.0137-2.0156	-
Uranium-236	(3)	Percent	Weight	2	0.0275	0.026-0.029	-

(1) All levels are maximums except uranium hexafluoride which is a minimum.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

SPECIFICATION ANALYSES FOR RUSSIAN REACTOR RETURNS

CY-1980

Measurement	Feed Specification Level (1)	Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
Uranium Hexafluoride	99.5	Percent	Weight	3	99.963	99.96-99.97	0
Uranium	(3)	Percent	Weight	3	67.590	67.59-67.60	-
Hydrocarbons, etc.	0.01	Percent	Mole	3	<0.01	All <0.01	0
Antimony	1	ppm	U	3	<1	All <1	0
Bromine	5	ppm	U	3	<1	All <1	0
Chlorine	100	ppm	U	3	41.3	31-57	0
Niobium	1	ppm	U	3	<0.2	All <0.2	0
Phosphorus	50	ppm	U	3	<20	All <20	0
Ruthenium	1	ppm	U	3	<1	All <1	0
Silicon	100	ppm	U	3	7.7	6-9	0
Tantalum	1	ppm	U	3	<0.5	All <0.5	0
Titanium	1	ppm	U	3	<0.3	All <0.3	0
Nonvolatile Fluorides	300	ppm	U	3	116	38-186	0
Chromium	1500	ppm	235U	3	<185	All <185	0
Molybdenum	200	ppm	235U	3	<7	All <7	0
Tungsten	200	ppm	235U	3	<18	All <18	0
Vanadium	200	ppm	235U	3	<11	All <11	0
Uranium-233	500	ppm	235U	3	<400	All <400	0
Uranium-232	0.110	ppm	235U	3	<0.005	All <0.005	0
Boron Equivalent Cross Section	8	ppm	U	3	<1.8	All <1.8	0
Fission Product Gamma	20	Percent of Aged	U	3	<5	All <5	0
Fission Product Beta	10	Natural U	U	3	<0.3	All <0.3	0
Transuranic Alpha	1500	d/m/g	U	3	<5	All <5	0
Uranium-234	(3)	Percent	Weight	3	0.021	0.019-0.022	-
Uranium-235	(3)	Percent	Weight	3	2.6784	2.6783-2.6784	-
Uranium-236	(3)	Percent	Weight	3	0.016	0.014-0.018	-

(1) All levels are maximums except uranium hexafluoride which is a minimum.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGPP.

Table 16-74
SPECIFICATION ANALYSES FOR BNFL REACTOR RETURNS
CY-1974

Measurement	Feed Specification Level (1)	Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
Uranium Hexafluoride	99.5	Percent	Weight	15	99.972	99.94-100	0
Uranium	(3)	Percent	Weight	15	67.600	67.58-67.62	-
Hydrocarbons, etc.	0.01	Percent	Mole	15	<0.01	All <0.01	0
Antimony	1	ppm	U	15	<1	All <1	0
Bromine	5	ppm	U	15	<1	All <1	0
Chlorine	100	ppm	U	15	33.3	18-49	0
Niobium	1	ppm	U	15	<0.2	All <0.2	0
Phosphorus	50	ppm	U	15	<20	All <20	0
Ruthenium	1	ppm	U	15	<1	All <1	0
Silicon	100	ppm	U	15 (12)	6.4	<2-13	0
Tantalum	1	ppm	U	15	<0.5	All <0.5	0
Titanium	1	ppm	U	15	<0.3	All <0.3	0
Nonvolatile Fluorides	300	ppm	U	15	44.5	17-95	0
Chromium	1500	ppm	235U	15	<780	All <780	0
Molybdenum	200	ppm	235U	15	<31	All <31	0
Tungsten	200	ppm	235U	15	<78	All <78	0
Vanadium	200	ppm	235U	15	<47	All <47	0
Uranium-233	500	ppm	235U	15	<100	All <100	0
Uranium-232	0.110	ppm	235U	15	<0.01	All <0.01	0
Boron Equivalent Cross Section	8	Percent of Aged	U	15 (2)	3.6	<1.8-4.1	0
Fission Product Gamma	20	Percent of Aged	U	15	<5	All <5	0
Fission Product Beta	10	Natural U	U	15	<2	All <2	0
Transuranic Alpha	1500	d/m/g	U	15 (9)	170	18-294	0
Uranium-234	(3)	Percent	Weight	15	0.005	All 0.005	0
Uranium-235	(3)	Percent	Weight	15	0.6423	0.6403-0.6484	-
Uranium-236	(3)	Percent	Weight	15	0.0109	0.010-0.011	-
Cylinder Pressure	75	PSIA	at 200°F	15	65.8	65-68	0

(1) All levels are maximums except uranium hexafluoride which is a minimum.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification.

Table 16-75

SPECIFICATION ANALYSES FOR BNFL REACTOR RETURNS

CY-1975

Measurement	Feed Specification Level (1)	Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
Uranium Hexafluoride	99.5	Percent	Weight	14	99.984	99.94-100	0
Uranium	(3)	Percent	Weight	14	67.608	67.58-67.62	-
Hydrocarbons, etc.	0.01	Percent	Mole	14	<0.01	All <0.01	0
Antimony	1	ppm	U	14	<1	All <1	0
Bromine	5	ppm	U	14	<1	All <1	0
Chlorine	100	ppm	U	14	36.8	21-55	0
Viobium	1	ppm	U	14	<0.2	All <0.2	0
Phosphorus	50	ppm	U	14	<20	All <20	0
Ruthenium	1	ppm	U	14	<1	All <1	0
Silicon	100	ppm	U	14	8.1	<2-20	0
Tantalum	1	ppm	U	14	<0.5	All <0.5	0
Titanium	1	ppm	U	14	<0.2	All <0.2	0
Nonvolatile Fluorides	300	ppm	U	14	43.8	<1-185	0
Chromium	1500	ppm	235U	14	<780	All <780	0
Molybdenum	200	ppm	235U	14	<31	All <31	0
Tungsten	200	ppm	235U	14	<78	All <78	0
Vanadium	200	ppm	235U	14	<47	All <47	0
Uranium-233	500	ppm	235U	14	<100	All <100	0
Uranium-232	0.110	ppm	235U	14	<0.05	All <0.05	0
Boron Equivalent Cross Section	8	ppm	U	14	2.0	<1.8-2.0	0
Fission Product Gamma	20	Percent of Aged	U	14	<5	All <5	0
Fission Product Beta	10	Natural U	U	14	<2	All <2	0
Transuranic Alpha	1500	d/m/g	U	14	41.7	7-139	0
Uranium-234	(3)	Percent	Weight	14	0.0061	0.0050-0.0080	-
Uranium-235	(3)	Percent	Weight	14	0.8390	0.6407-1.1299	-
Uranium-236	(3)	Percent	Weight	14	0.0120	0.010-0.014	-

(1) All levels are maximums except uranium hexafluoride which is a minimum.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 16-76
SPECIFICATION ANALYSES FOR BNFL REACTOR RETURNS
CY-1976

Measurement	Feed Specification Level (1)	Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
Uranium Hexafluoride	99.5	Percent	Weight	9	99.986	99.96-100	0
Uranium	(3)	Percent	Weight	9	67.609	67.59-67.62	-
Hydrocarbons, etc.	0.01	Percent	Mole	9	<0.01	All <0.01	0
Antimony	1	ppm	U	9	<1	All <1	0
Bromine	5	ppm	U	9	<1	All <1	0
Chlorine	100	ppm	U	9	<1	All <1	0
Niobium	1	ppm	U	9	54.3	33-73	0
Phosphorus	50	ppm	U	9	<0.2	All <0.2	0
Ruthenium	1	ppm	U	9	<20	All <20	0
Silicon	100	ppm	U	9	<1	All <1	0
Tantalum	1	ppm	U	9	12.4	3-22	0
Titanium	1	ppm	U	9	<0.5	All <0.5	0
Nonvolatile Fluorides	300	ppm	U	9	<0.3	All <0.3	0
Chromium	1500	ppm	U	9	22.3	5-55	0
Molybdenum	200	ppm	235U	9	<800	All <800	0
Tungsten	200	ppm	235U	9	<32	All <32	0
Vanadium	200	ppm	235U	9	<80	All <80	0
Uranium-233	500	ppm	235U	9	<48	All <48	0
Uranium-232	0.110	ppm	235U	9	<100	All <100	0
Boron Equivalent Cross Section	8	ppm	U	9	<0.05	All <0.05	0
Fission Product Gamma	20	Percent of Aged	U	9	<1.8	All <1.8	0
Fission Product Beta	10	Natural	U	9	<5	All <5	0
Transuranic Alpha	1500	d/m/g	U	9	<2	All <2	0
Uranium-234	(3)	Percent	Weight	9	<25	All <25	0
Uranium-235	(3)	Percent	Weight	9	0.0050	0.0045-0.0054	-
Uranium-236	(3)	Percent	Weight	9	0.6420	0.6293-0.6457	-
				9	0.0111	0.010-0.013	-

(1) All levels are maximums except uranium hexafluoride which is a minimum.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 16-77
 SPECIFICATION ANALYSES FOR BNFL REACTOR RETURNS
 CY-1977

Measurement	Feed Specification Level (1)	Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
uranium Hexafluoride	99.5	Percent	Weight	13	99.970	99.94-100	0
uranium hydrocarbons, etc.	(3) 0.01	Percent	Weight	13	67.598	67.58-67.62	-
nitromyromine	1	ppm	Mole	13	<0.01	All <0.01	0
chlorine	5	ppm	U	13	<1	All <1	0
iodine	100	ppm	U	13	<1	All <1	0
boron	1	ppm	U	13	35.5	16-80	0
phosphorus	50	ppm	U	13	<0.2	All <0.2	0
methane	1	ppm	U	13	<20	All <20	0
silicon	100	ppm	U	13	<1	All <1	0
antimony	1	ppm	U	13	3.0	<2-3	0
titanium	1	ppm	U	13	<0.5	All <0.5	0
vanadium	1	ppm	U	13	<0.3	All <0.3	0
volatile Fluorides	300	ppm	U	13	47.1	8-132	0
chromium	1500	ppm	²³⁵ U	13	<450	All <450	0
niobium	200	ppm	²³⁵ U	13	<18	All <18	0
zirconium	200	ppm	²³⁵ U	13	<45	All <45	0
tungsten	200	ppm	²³⁵ U	13	<14	All <14	0
vanadium	500	ppm	²³⁵ U	13	<100	All <100	0
uranium-233	0.110	ppm	²³⁵ U	13	<0.02	All <0.02	0
uranium-232	8	Percent of Aged	U	13	<1.8	All <1.8	0
boron Equivalent Cross Section	20	Percent of Aged	U	13	<5	All <5	0
Fission Product Gamma	10	Natural	U	13	<2	All <2	0
Fission Product Beta	1500	d/m/g	U	13	<25	All <25	0
Transuranic Alpha	(3)	Percent	Weight	13	0.0191	0.0049-0.031	-
uranium-234	(3)	Percent	Weight	13	2.0645	0.6415-3.0095	-
uranium-235	(3)	Percent	Weight	13	0.057	<0.0008-0.21	-

(1) All levels are maximums except uranium hexafluoride which is a minimum.
 (2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.
 (3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

Table 16-78
 SPECIFICATION ANALYSES FOR BNFL REACTOR RETURNS
 CY-1978

Measurement	Feed Specification Level (1)	Units	Basis	Number of Samples (2)	Average	Range	Number Exceeding Specification
Uranium Hexafluoride	99.5	Percent	Weight	4	99.960	99.91-99.99	0
Uranium	(3)	Percent	Weight	4	67.592	67.56-67.16	-
Hydrocarbons, etc.	0.01	Percent	Mole	4	<0.01	All <0.01	0
Antimony	1	ppm	U	4	<1	All <1	0
Bromine	5	ppm	U	4	<1	All <1	0
Chlorine	100	ppm	U	4	50.2	23-88	0
Niobium	1	ppm	U	4	<0.2	All <0.2	0
Phosphorus	50	ppm	U	4	<20	All <20	0
Ruthenium	1	ppm	U	4	<1	All <1	0
Silicon	100	ppm	U	4	38.5	5-88	0
Tantalum	1	ppm	U	4	<0.5	All <0.5	0
Titanium	1	ppm	U	4	<0.3	All <0.3	0
Nonvolatile Fluorides	300	ppm	U	4	30.8	10-75	0
Chromium	1500	ppm	235U	4	<700	All <700	0
Molybdenum	200	ppm	235U	4	<28	All <28	0
Tungsten	200	ppm	235U	4	<70	All <70	0
Vanadium	200	ppm	235U	4	<42	All <42	0
Uranium-233	500	ppm	235U	4	<400	All <400	0
Uranium-232	0.110	ppm	235U	4	<0.01	All <0.01	0
Boron Equivalent Cross Section	8	ppm	U	4	<1.8	All <1.8	0
Fission Product Gamma	20	Percent of Aged		4	<5	All <5	0
Fission Product Beta	10	Natural	U	4	<2	All <2	0
Transuranic Alpha	1500	d/m/g	U	4 (1)	5	<5-5	0
Uranium-234	(3)	Percent	Weight	4	0.0088	0.0050-0.020	-
Uranium-235	(3)	Percent	Weight	4	1.0622	0.7110-2.1156	-
Uranium-236	(3)	Percent	Weight	4 (1)	0.051	0.0002-0.050	-

(1) All levels are maximums except uranium hexafluoride which is a minimum.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORDGP.

ORGDP PRODUCT

Table 17-80 provides information concerning measurements of ORGDP product for CY 1980. Although ORGDP product does not have impurity specifications, the results of analyses are presented in the same format as are reactor return feed results for comparison. Included in the table are the measurement performed, the feed specification, the units and basis of results, the number of samples analyzed, the arithmetic average of results (less than values are excluded in the averages), and the range of results.

Table 17-80
ANALYSES FOR ORGDP PRODUCT
CY-1980

Measurement	Feed Specification Level (1)	Units	Basis	Number of Samples (2)	Average	Range
Uranium Hexafluoride	99.5	Percent	Weight	10	99.940	99.87-100
Uranium	(3)	Percent	Weight	10	67.578	67.53-67.62
Hydrocarbons, etc.	0.01	Percent	Mole	10	<0.01	A11 <0.01
Antimony	1	ppm	U	10	<1	A11 <1
Bromine	5	ppm	U	10	<1	A11 <1
Chlorine	100	ppm	U	10	48.5	18-79
Niobium	1	ppm	U	10	<0.2	A11 <0.2
Phosphorus	50	ppm	U	10	<20	A11 <20
Ruthenium	1	ppm	U	10	<1	A11 <1
Silicon	100	ppm	U	10 (9)	8.0	<2-18
Tantalum	1	ppm	U	10	<0.5	A11 <0.5
Titanium	1	ppm	U	10	<0.3	A11 <0.3
Nonvolatile Fluorides	300	ppm	U	10	70.5	10-228
Chromium	1500	ppm	²³⁵ U	10	<200	A11 <200
Molybdenum	200	ppm	²³⁵ U	10	27.5	<6-38
Tungsten	200	ppm	²³⁵ U	10	<20	A11 <20
Vanadium	200	ppm	²³⁵ U	10	<12	A11 <12
Uranium-233	500	ppm	²³⁵ U	9	<200	A11 <200
Uranium-232	0.110	ppm	²³⁵ U	10	<0.005	A11 <0.005
Boron Equivalent Cross Section*	8	Percent	U	10	<1.8	A11 <1.8
Fission Product Gamma	20	Percent of Aged		10	<5	A11 <5
Fission Product Beta	10	Natural U		10	<0.3	A11 <0.3
Transuranic Alpha	1500	d/m/g	U	10	8.5	<2-20
Uranium-234	(3)	Percent	Weight	10 (6)	0.0237	0.019-0.030
Uranium-235	(3)	Percent	Weight	10	2.8051	2.5844-3.285
Uranium-236	(3)	Percent	Weight	10 (7)	0.0044	<0.0016-0.007

*Includes Th at <1, Dy at <0.2, Gd at <0.2 and Sm at <0.4.

(1) All levels maximums except uranium hexafluoride which is a minimum.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

(3) Not a specific specification. Note also absence of vapor pressure measurements at 200°F which are not currently measured at ORGDP.

SUPPLEMENTAL ANALYSES FOR CY 1980

The following tables provide a summary of results of metallic impurities observed in natural feed, reactor return feed, and ORGDP product as analyzed by carrier distillation/emission spectroscopy (Quantometer), except Dy, Gd, Sm, Tc and Th. The following tables are included.

<u>Table Number</u>	<u>Vendor</u>
<u>Natural Feed</u>	
18-1	Allied Chemical
18-2	Eldorado Nuclear
18-3	Comhurex
18-4	Kerr-McGee
18-5	BNFL
<u>Reactor Return Feed</u>	
18-6	Comhurex
18-7	Russian
<u>ORGDP Product</u>	
18-8	ORGDP

The tables include results of metallic impurities in all samples for which uranium was analyzed. Also included in the tables for reactor return feed and ORGDP product are the summaries of results for dysprosium, gadolinium, samarium, technetium, and thorium. The tables provide the required measurement, the units and basis for results, the number of samples, the arithmetic average (less than values are excluded in the averages), and the range and results.

Table 18-1

SUPPLEMENTAL ANALYSES FOR ALLIED CHEMICAL NATURAL FEED

CY-1980

Measurement (1)	Units	Basis	Number of Samples (2)	Average	Range
Aluminum	ppm	U	28	<2	A11 <2
Antimony	ppm	U	28	<5	A11 <5
Barium	ppm	U	28	<0.1	A11 <0.1
Beryllium	ppm	U	28	<0.1	A11 <0.1
Bismuth	ppm	U	28	<1	A11 <1
Boron	ppm	U	28	<0.1	A11 <0.1
Cadmium	ppm	U	28(4)	0.87	<0.1-1.2
Calcium	ppm	U	28(3)	3.3	<2-5
Chromium	ppm	U	28(5)	11.8	<2-25
Cobalt	ppm	U	28(1)	1.0	<1-1
Copper	ppm	U	28(26)	23.0	<2-155
Iron	ppm	U	28(16)	22.5	<5-70
Lead	ppm	U	28	<2	A11 <2
Lithium	ppm	U	28	<2	A11 <2
Magnesium	ppm	U	28(6)	3.0	<2-4
Manganese	ppm	U	28(4)	4.0	<2-4
Molybdenum	ppm	U	28	<2	A11 <2
Nickel	ppm	U	28(25)	20.4	<2-150
Phosphorus	ppm	U	28	<40	A11 <40
Silicon	ppm	U	28(1)	7	<2-7
Sodium	ppm	U	28(4)	4.8	<2-7
Tin	ppm	U	28	<2	A11 <2
Vanadium	ppm	U	28	<2	A11 <2
Zinc	ppm	U	28	<20	A11 <20

(1) All analyses by Quantometer spectrochemistry.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

Table 18-2
 SUPPLEMENTAL ANALYSES FOR ELDORADO NUCLEAR NATURAL FEED
 CY-1980

Measurement (1)	Units	Basis	Number of Samples (2)	Average	Range
Aluminum	ppm	U	83(2)	10	<2-15
Antimony	ppm	U	83	<5	A11 <5
Barium	ppm	U	83	<1	A11 <1
Beryllium	ppm	U	83(1)	0.2	<0.2-0.2
Bismuth	ppm	U	83	<1	A11 <1
Boron	ppm	U	83	<0.1	A11 <0.1
Cadmium	ppm	U	83(7)	0.27	<0.1-0.4
Calcium	ppm	U	83(4)	2.8	<2-4
Chromium	ppm	U	83(24)	9.2	<2-40
Cobalt	ppm	U	83(1)	2.0	<1-2
Copper	ppm	U	83(80)	13.1	<2-50
Iron	ppm	U	83(25)	25.1	<5-80
Lead	ppm	U	83	<2	A11 <2
Lithium	ppm	U	83(1)	5	<2-5
Magnesium	ppm	U	83(9)	2.9	<2-3
Manganese	ppm	U	83(1)	3	<2-3
Molybdenum	ppm	U	83	<2	A11 <2
Nickel	ppm	U	83(76)	18.1	<2-155
Phosphorus	ppm	U	83	<40	A11 <40
Silicon	ppm	U	83(7)	6.4	<2-10
Sodium	ppm	U	83(11)	3.2	<2-5
Tin	ppm	U	83(1)	2	<2-2
Vanadium	ppm	U	83	<2	A11 <2
Zinc	ppm	U	83	<20	A11 <20

(1) All analyses by Quantometer spectrochemistry.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

Table 18-3

SUPPLEMENTAL ANALYSES FOR COMHUREX NATURAL FEED

CY-1980

Measurement (1)	Units	Basis	Number of Samples (2)	Average	Range
Aluminum	ppm	U	62(1)	5	<2-5
Antimony	ppm	U	62(62)	<5	A11 <5
Barium	ppm	U	62	<1	A11 <1
Beryllium	ppm	U	62	<0.1	A11 <0.1
Bismuth	ppm	U	62	<1	A11 <1
Boron	ppm	U	62	<0.1	A11 <0.1
Cadmium	ppm	U	62(11)	0.33	<0.1-1
Calcium	ppm	U	62(3)	3.0	<2-4
Chromium	ppm	U	62(9)	7.9	<2-15
Cobalt	ppm	U	62	<1	A11 <1
Copper	ppm	U	62(61)	11.7	<2-35
Iron	ppm	U	62(28)	27.4	<5-110
Lead	ppm	U	62(1)	4	<2-4
Lithium	ppm	U	62	<2	A11 <2
Magnesium	ppm	U	62(22)	2.7	<2-4
Manganese	ppm	U	62(1)	5	<2-5
Molybdenum	ppm	U	62	<2	A11 <2
Nickel	ppm	U	62(60)	13.9	<2-55
Phosphorus	ppm	U	62	<40	A11 <40
Silicon	ppm	U	62(8)	4.6	<2-10
Sodium	ppm	U	62(11)	4.4	<2-15
Tin	ppm	U	62(1)	4	<2-4
Vanadium	ppm	U	62	<2	A11 <2
Zinc	ppm	U	62	<20	A11 <20

(1) All analyses by Quantometer spectrochemistry.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

Table 18-4

SUPPLEMENTAL ANALYSES FOR KERR-MCGEE NATURAL FEED

CY-1980

Measurement (1)	Units	Basis	Number of Samples (2)	Average	Range
Aluminum	ppm	U	154(6)	4.0	<2-7
Antimony	ppm	U	154	<5	All <5
Barium	ppm	U	154(1)	1	<0.1-1
Beryllium	ppm	U	154(1)	0.1	<0.1-0.1
Bismuth	ppm	U	154	<1	All <1
Boron	ppm	U	154	<0.1	All <0.1
Cadmium	ppm	U	154(19)	0.37	<0.1-0.8
Calcium	ppm	U	154(10)	4.5	<2-15
Chromium	ppm	U	154(42)	11.8	<2-45
Cobalt	ppm	U	154(7)	2.4	<1-4
Copper	ppm	U	154(152)	16.1	<2-100
Iron	ppm	U	154(83)	21.1	<2-40
Lead	ppm	U	154(3)	5.7	<2-8
Lithium	ppm	U	154(2)	4.5	<2-5
Magnesium	ppm	U	154(32)	3.1	<2-5
Manganese	ppm	U	154(2)	4.0	<2-5
Molybdenum	ppm	U	154	<2	All <2
Nickel	ppm	U	154(141)	15.6	<2-80
Phosphorus	ppm	U	154	<40	All <40
Silicon	ppm	U	154(11)	4.4	<2-7
Sodium	ppm	U	154(29)	4.3	<2-20
Tin	ppm	U	154(3)	4.7	<2-5
Vanadium	ppm	U	154	<2	All <2
Zinc	ppm	U	154	<20	All <20

(1) All analyses by Quantometer spectrochemistry.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

Table 18-5

SUPPLEMENTAL ANALYSES FOR BNFL NATURAL FEED

CY-1980

Measurement (1)	Units	Basis	Number of Samples (2)	Average	Range
Aluminum	ppm	U	13	<2	A11 <2
Antimony	ppm	U	13	<5	A11 <5
Barium	ppm	U	13	<1	A11 <1
Beryllium	ppm	U	13	<0.1	A11 <0.1
Bismuth	ppm	U	13	<1	A11 <1
Boron	ppm	U	13	<0.1	A11 <0.1
Cadmium	ppm	U	13(1)	0.3	<0.1-0.3
Calcium	ppm	U	13	<2	A11 <2
Chromium	ppm	U	13(5)	4.4	<2-8
Cobalt	ppm	U	13	<1	A11 <1
Copper	ppm	U	13(10)	9.6	<2-25
Iron	ppm	U	13(7)	26	<5-40
Lead	ppm	U	13	<2	A11 <2
Lithium	ppm	U	13	<2	A11 <2
Magnesium	ppm	U	13(1)	4	<2-4
Manganese	ppm	U	13	<2	A11 <2
Molybdenum	ppm	U	13	<2	A11 <2
Nickel	ppm	U	13	16.7	<2-80
Phosphorus	ppm	U	13	<40	A11 <40
Silicon	ppm	U	13(1)	4	<2-4
Sodium	ppm	U	13(3)	2.7	<2-3
Tin	ppm	U	13	<2	A11 <2
Vanadium	ppm	U	13	<2	A11 <2
Zinc	ppm	U	13	<20	A11 <20

(1) All analyses by Quantometer spectrochemistry.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

Table 18-6.

SUPPLEMENTAL ANALYSES FOR COMHUREX REACTOR RETURNS

CY-1980

Measurement (1)	Units	Basis	Number of Samples (2)	Average	Range
Aluminum	ppm	U	26(1)	5	<2-5
Antimony	ppm	U	26	<5	A11 <5
Barium	ppm	U	26	<0.1	A11 <0.1
Beryllium	ppm	U	26	<0.1	A11 <0.1
Bismuth	ppm	U	26	<1	A11 <1
Boron	ppm	U	26	<0.1	A11 <0.1
Cadmium	ppm	U	26(4)	0.58	<0.1-1.5
Calcium	ppm	U	26(2)	16	<2-30
Chromium	ppm	U	26(6)	4.2	<2-5
Cobalt	ppm	U	26	<1	A11 <1
Copper	ppm	U	26(24)	14	<2-50
Iron	ppm	U	26(20)	20	<5-50
Lead	ppm	U	26	<2	A11 <2
Lithium	ppm	U	26	<2	A11 <2
Magnesium	ppm	U	26(8)	5.0	<2-20
Manganese	ppm	U	26	<2	A11 <2
Molybdenum	ppm	U	26	<2	A11 <2
Nickel	ppm	U	26(22)	13	<2-55
Phosphorus	ppm	U	26	<40	A11 <40
Silicon	ppm	U	26(1)	10	<2-10
Sodium	ppm	U	26(4)	4.8	<2-7
Tin	ppm	U	26(1)	10	<2-10
Vanadium	ppm	U	26	<2	A11 <2
Zinc	ppm	U	26	<20	A11 <20
Dysprosium	ppm	U	26	<0.2	A11 <0.2
Gadolinium	ppm	U	26	<0.2	A11 <0.2
Samarium	ppm	U	26	<0.4	A11 <0.4
Technetium	ppm	U	24(22)	0.08	<0.005-0.2
Thorium	ppm	U	26	<1	A11 <1

(1) All analyses by Quantometer spectrochemistry, except Dy, Gd, Sm, Tc, and Th.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

Table 18-7
 SUPPLEMENTAL ANALYSES FOR RUSSIAN REACTOR RETURNS
 CY-1980

Measurement (1)	Units	Basis	Number of Samples (2)	Average	Range
Aluminum	ppm	U	3(1)	3	<2-3
Antimony	ppm	U	3	<5	A11 <5
Barium	ppm	U	3	<0.1	A11 <0.1
Beryllium	ppm	U	3	<0.1	A11 <0.1
Bismuth	ppm	U	3	<1	A11 <1
Boron	ppm	U	3	<0.1	A11 <0.1
Cadmium	ppm	U	3	<0.1	A11 <0.1
Calcium	ppm	U	3	<2	A11 <2
Chromium	ppm	U	3(1)	70	<2-70
Cobalt	ppm	U	3	<1	A11 <1
Copper	ppm	U	3	35	15-55
Iron	ppm	U	3	13	10-15
Lead	ppm	U	3	<2	A11 <2
Lithium	ppm	U	3	<2	A11 <2
Magnesium	ppm	U	3	<2	A11 <2
Manganese	ppm	U	3(1)	3	<2-3
Molybdenum	ppm	U	3	<2	A11 <2
Nickel	ppm	U	3	43	8-60
Phosphorus	ppm	U	3	<40	A11 <40
Silicon	ppm	U	3	<2	A11 <2
Sodium	ppm	U	3	<2	A11 <2
Tin	ppm	U	3	<2	A11 <2
Vanadium	ppm	U	3	<2	A11 <2
Zinc	ppm	U	3	<20	A11 <20
Dysprosium	ppm	U	3	<0.2	A11 <0.2
Gadolinium	ppm	U	3	<0.2	A11 <0.2
Samarium	ppm	U	3	<0.4	A11 <0.4
Technetium	ppm	U	3	0.070	0.05-.10
Thorium	ppm	U	3	<1	A11 <1

(1) All analyses by Quantometer spectrochemistry, except Dy, Gd, Sm, Tc, and Th.

(2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

Table 18-8

SUPPLEMENTAL ANALYSES FOR ORGDP PRODUCT

CY-1980

Measurement (1)	Units	Basis	Number of Samples (2)	Average	Range
Aluminum	ppm	U	10(1)	3	<2-3
Antimony	ppm	U	10	<5	All <5
Barium	ppm	U	10	<1	All <1
Beryllium	ppm	U	10	<0.1	All <0.1
Bismuth	ppm	U	10	<1	All <1
Boron	ppm	U	10(1)	0.2	All <0.2
Cadmium	ppm	U	10	<0.1	All <0.1
Calcium	ppm	U	10	<2	All <2
Chromium	ppm	U	10(1)	3	<2-3
Cobalt	ppm	U	10	<1	All <1
Copper	ppm	U	10	30	5-155
Iron	ppm	U	10(6)	17	<5-65
Lead	ppm	U	10	<2	All <2
Lithium	ppm	U	10	<2	All <2
Magnesium	ppm	U	10(2)	3.0	<2-4
Manganese	ppm	U	10	<2	All <2
Molybdenum	ppm	U	10	<2	All <2
Nickel	ppm	U	10(9)	22	<2-70
Phosphorus	ppm	U	10	<40	All <40
Silicon	ppm	U	10	<2	All <2
Sodium	ppm	U	10(3)	3	<2-3
Tin	ppm	U	10	<2	All <2
Vanadium	ppm	U	10	<2	All <2
Zinc	ppm	U	10	<20	All <20
Dysprosium	ppm	U	10	<0.2	All <0.2
Gadolinium	ppm	U	10	<0.2	All <0.2
Samarium	ppm	U	10	<0.4	All <0.4
Technetium	ppm	U	10(8)	0.202	<0.005-0.25
Thorium	ppm	U	10	<1	All <1

- (1) All analyses by Quantometer spectrochemistry, except Dy, Gd, Sm, Tc and Th.
- (2) The numbers in parentheses reflect the number of analyses in averages. Only quantified results used in averages, i.e., "less than" results are excluded.

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